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Conseil Permanent International pour
l'Exploration de la Mer
CHARLOTTENLUND SLOT – DANEMARK

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RAPPORT
ET
PROCÈS-VERBAUX DES RÉUNIONS

Volume 146

1ÈRE PARTIE
PROCÈS-VERBAUX
Septembre-Octobre
1958

2ÈME PARTIE
RAPPORT ADMINISTRATIF
1957

En Commission chez
ANDR. FRED. HØST & FILS
COPENHAGUE

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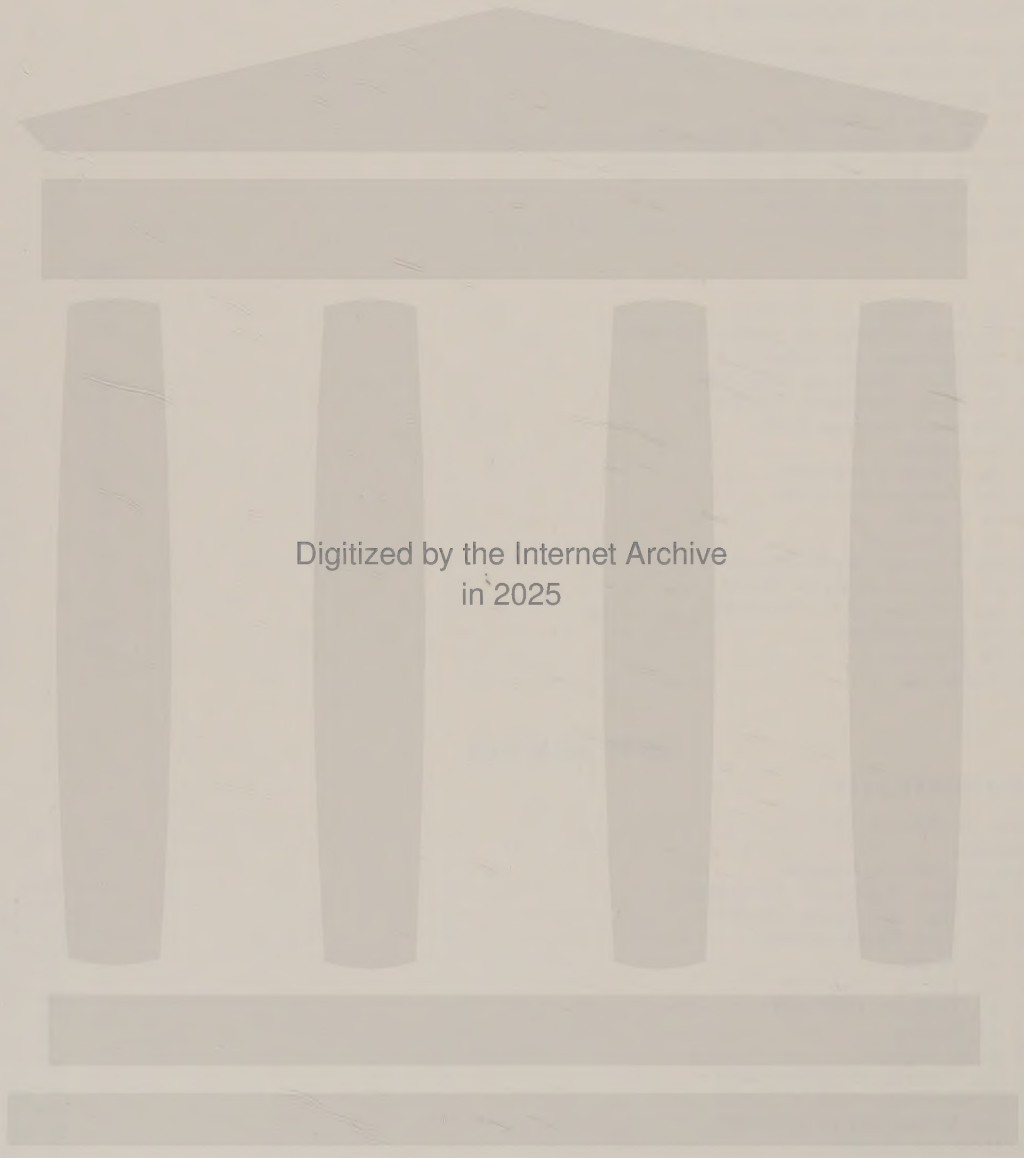

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Service de Publications: Mme H. Harder, Mme M. Larvig.
Service Statistique: Mlle E. Christiansen, Mlle M. Goodman.
Service Hydrographique: M. J. Smed, Mag. scient. et Cand. mag., Hydrographe, Mme P. Holm, Mme R. Larsen, Mme I. Bondorff, M. P. Alnøe.

AGENDA

for the forty-sixth Meeting of the International Council for the Exploration of the Sea.
Copenhagen, 29th September—4th October, 1958.

A. General Assembly: Opening Meeting.

1. Opening of the Proceedings by the President.
2. Presentation of Administrative Report.
3. Report on Permanent Commission.
4. Report on International Whaling Commission.
5. Report on the International Commission for the Northwest Atlantic Fisheries.
6. Report on Working Group on Oceanography.
   International Geophysical Year.
7. Report on the United Nations Conference on the Law of the Sea.
8. Report on the Loanda Symposium on Oceanography and Marine Fisheries at the Coast of Western Africa.

B. Meeting of Delegates.

9. Opening of the Proceedings by the President.
10. Presentation of Estimated Statement of Accounts for 1957–1958.
11. Election of President, First Vice-President, and three Vice-Presidents.
12. Consideration of the Consultative Committee's Recommendations approved by the Bureau.
13. Adoption of the Administrative Report.
14. Final Approval of the Accounts for 1956–1957.
15. Estimate for the Financial Year 1958–1959.
16. Nomination of Finance Committee Members and Editors.
17. Other Business.

C. General Assembly: Final Meeting.

18. Opening of the Proceedings by the President (including Budget Summary).
19. Presentation of Recommendations adopted by the Council.
20. Time and Place for next Council Meeting.
21. Other Business.
22. Conclusion of the Meeting.

1ÈRE PARTIE

PROCÈS-VERBAUX

REPORT

of

THE FORTY-SIXTH MEETING OF THE COUNCIL

General Assembly, Opening Meeting, Monday, 29. September 1958, at 10.00 a. m.

Agenda, Point 1. Dr. FURNESTIN, in opening the meeting, adressed the company as follows:—

"Mesdames, Messieurs,

Je vous souhaite la bienvenue à la 46ième Réunion Statutaire du Conseil International pour l'Exploration de la Mer. Malheureusement, cette réunion se tiendra dans la tristesse et le deuil. Vous avez appris la mort de notre regretté Président VEDEL TÅNING. Et c'est pourquoi, conformément aux Statuts, j'ai dû ouvrir cette séance.

Mais avant le commencement de nos travaux, je veux rappeler les principales étapes de la belle carrière de VEDEL TÅNING.

Après de brillantes études, qui l'amenèrent à soutenir une thèse remarquable d'ichtyologie, il devint le disciple du Professeur JOHANNES SCHMIDT. Formé aux rudes disciplines de la science et de la mer pour ce maître prestigeux, avec lequel il fit le tour du monde sur l'une des plus fameuse navire océanographique, le "Dana", VEDEL TÅNING se fit rapidement connaître par les belles études qu'il publia, d'abord sur les oiseaux puis sur les poissons.

Elève préféré du Professeur SCHMIDT, il prit tout naturellement le relais, lorsque le grand biologiste danois mourut.

Réaliste, conscient des services qu'il pouvait rendre à son pays, il n'hésita pas à orienter les recherches vers les questions pratiques de la pêche.

Savant discret et tranquille, mais ferme dans ses opinions, il ne se payait pas de brillantes hypothèses mais se laissait guider par des résultats sûrs. Il acquit très vite la réputation d'un maître compétent et unanimement respecté et fut nommé Directeur de l'Institut Danois des Pêches Maritimes. Il représenta son pays au sein de diverses commissions internationales et notamment de ce Conseil dont il fut Président de Comité dès 1932, puis Délégué du Danemark en 1948, Membre du Bureau de 1952 à 1954, Premier Vice-Président de 1955 à 1957 et enfin Président en 1957.

Au cours de l'année écoulée nous avons tous apprécié sa droiture, la prudence et la justesse de ses avis, l'étendue de son savoir. Et nous mesurons la perte irréparable que nous venons de subir, et qui nous cause à tous beaucoup de peine.

Je suis sûr d'être interprète du Conseil entier en adressant à Madame TÅNING nos condoléances et l'assurance de notre respectueuse sympathie. Et je vous demande de bien vouloir marquer pour quelques instants de recueillement le respect, que nous éprouvons pour le mémoire de VEDEL TÅNING, notre regretté Président et ami."

The meeting stood in silence.

Dr. FURNESTIN then suggested that, as was customary, a telegram be sent to His Majesty the King of Denmark, in the following terms:—

"Les membres du Conseil International pour l'Exploration de la Mer réunis à Copenhague à l'occasion de sa quarante-sixième Conférence Statutaire demandent la permission de témoigner à Votre Majesté leurs sentiments les plus respectueux.

J. FURNESTIN
Faisant fonction de Président."

Dr. FURNESTIN also proposed that on behalf of the members the following telegram be sent to Mrs. TÅNING:—

"Profondément affligés par le malheur qui vous frappe, les membres du Conseil International pour l'Exploration de la Mer vous adressent leurs condoléances et l'expression de leur respectueuse sympathie.

J. FURNESTIN
Faisant fonction de Président."

Dr. FURNESTIN continued:—

"J'aimerais également accueillir nos Présidents Honoraires, Dr. K. A. ANDERSSON et M. A. T. A. DOBSON. Puis je voudrais féliciter les nouveaux Délégués, le Professeur, Dr. A. BÜCKMANN, 3ième Délégué de l'Allemagne, et le Dr. J. J. MARTY, Délégué de l'URSS à la place du Professeur A. SVETOVIDOV. Nous avons également parmi nous un certain nombre d'observateurs, notamment M. M. HOWARD H. ECKLES, Washington, Dr. ERIK M. POULSEN, ICNAF, Dr. P. F. ELSON, Fisheries Research Board of Canada, M. HORACIO ROSA de la FAO, et Lt.-Commander J. R. LUMBY. C'est avec plaisir que nous les accueillons."

Agenda, Point 2. Dr. FURNESTIN drew attention to the Administrative Report of the Office, which he would ask the Delegates to approve later.

Agenda, Points 3—8. Reports by the members who had acted as observers for ICES at the various international meetings, held during the year, were distributed to the company. (These reports have been included in the mimeographed Preliminary Report of the 46th Council Meeting and distributed to all attendants in November 1958; they will therefore not be printed here.)

The meeting terminated at 10.45 a.m.

Meeting of Delegates, First Session, followed immediately

Agenda, Points 9 and 10. Dr. FURNESTIN opened the proceedings and presented the estimated Statement of Accounts for 1957/1958.

The Secretary General explained that the estimated excess of expenditure over income had been turned into an excess of income of about kr. 34,000. This was due partly to a considerable saving on publications and partly to an extra kr. 10,000 having been received from Italy for the financial year 1956/1957. According to a decision taken by the Bureau with regard to the staff the surplus would be somewhat lower, but the Bureau would report on this matter to the Delegates at the next meeting of Delegates.

Agenda, Point 11. Dr. FURNESTIN suggested deferring the elections until an extraordinary meeting of Delegates on Thursday, 2. October.

Dr. FURNESTIN said that the Delegates had a very important question to discuss, namely the Status of the Council.

Mr. ROLLEFSEN, Chairman of the *ad hoc* Committee, reported on the committee's negotiations with the Danish Government, which had so far given no results.

Mr. DINESEN then took the floor and thanked the acting President, on behalf of the Danish Government, for the kind words of sympathy expressed on the death of Dr. TÅNING. He then replied to Mr. ROLLEFSEN's statement and expressed as his personal view that the Danish Foreign Office would not be prepared to give the Council International Status; but he referred to a promise given at an earlier date that Denmark would consider the question favourably if the situation changed. After some discussion it was agreed to ask the *ad hoc* Committee to continue its negotiations.

The meeting terminated at 12.30 p.m.

Meeting of Delegates, Thursday, 2. October 1958, at 10.00 a. m.

Dr. FURNESTIN, having opened the proceedings by drawing attention to a memorandum on the question of the expenditure and income of the Council, explained that considerable increases in salaries paid to Danish Government Officials had been authorized by law of 7. June 1958, with effect from 1. April 1958, and the Bureau had decided that corresponding increases must be granted to the Council's staff. The Bureau had felt that the rise in living cost justified increases in these salaries and this would mean an increase of kr. 14,710.88 on the current year's budget and thus reduce the estimated surplus of kr. 33,952.35, shown in the preliminary accounts, by that amount. The total increase for a full year would amount to kr. 22,722.46. As the increases referred to did not cover the Secretary General and two ladies, the Bureau had decided to increase the salary of the Secretary General to kr. 30,000 and to pay an additional kr. 50.00 per month to each of the two ladies. It had also been agreed that provision should be made in the estimates for 1958/1959 for the mechanizing of the index of hydrographic data, which would cost about kr. 15,800. In view of the additional annual expenditure likely to be incurred in the coming years

resulting in an annual deficit in the budgets of about kr. 40,000 to kr. 50,000, the Bureau had decided to ask the Delegates to recommend to their respective Governments an increase in contributions, either by an increase of 25 % or by a flat rate increase of kr. 5,000 for each member country, starting in the year 1959/1960. He also pointed out that the Bureau had agreed that a deficit could be borne for the financial year 1958/1959 and possibly even for the following year.

A long discussion took place as to which financial year the increase should be effective from, and the majority was in favour of 1959/1960. But Mr. AGLEN said that in his opinion the increase should be deferred until the financial year 1960/1961, in order that all member countries could pay the increased contributions from the same date, namely 22. July, 1960. This was agreed.

Dr. FURNESTIN then raised the question as to which method should be followed with regard to the increase, a 25 % increase or an increase of kr. 5,000 for each country. After voting it was unanimously agreed to ask for a 25 % increase coming into force from the financial year 1960/1961. It was agreed that a letter should be written accordingly to all the Governments.

Agenda, Point 11. At Mr. AGLEN's suggestion it was agreed to adjourn and meet again at 3.00 p. m.; this would give the Delegates an opportunity to discuss the matter further.

The meeting adjourned at 11.30 a.m.

At 3.00 p.m. Dr. FURNESTIN opened the meeting and vacated the Chair in favour of the Chairman of the Consultative Committee, Dr. WENT, and the members of the Bureau left the room.

On their return, Dr. WENT announced that the Delegates proposed to make the following nominations:— President, Dr. J. FURNESTIN, First Vice-President, Mr. G. ROLLEFSEN; Vice-Presidents:— Dr. E. LELOUP, Mr. A. J. AGLEN, and Dr. J. HULT. These nominations would, Dr. WENT stated, have to be ratified at the final meeting of Delegates.

Dr. FURNESTIN thanked the Delegates for honouring him with their confidence.

The meeting terminated at 3.45 p. m.

Meeting of Delegates, Third Session, Saturday, 4. October 1958, at 3.00 p. m.

Dr. FURNESTIN opened the meeting and it was unanimously agreed to ratify the elections of President, First Vice-President, and three Vice-Presidents.

Agenda, Point 12. The President called on Dr. WENT, who presented the recommendations from the Consultative Committee; these had been approved by the Bureau with two exceptions, on which it had been decided that consideration should be deferred until May next. Dr. WENT had now realized the necessity of the provision for the sum of kr. 1,000 mentioned in item 6b, asked for by the Hydrographical Committee, and he asked the Delegates to accept this request, in addition to the other proposals which the Bureau had recommended. The other matter which had been postponed was mentioned in item 7 and was a request from the Statistical Committee of travelling expenses for the Secretary General.

The recommendations were adopted *en bloc* (see List of Resolutions below).

Agenda, Point 13. The President moved the approval of the Administrative Report. This was agreed.

Agenda, Point 14. The President then referred to the *Rapports et Procès-Verbaux,* Vol. 145, laid round the table, in which the Delegates would find the audited Accounts for 1956/1957. This report had been somewhat delayed this year owing to the necessity of issuing as soon as possible the contributions presented last year at the Plankton Symposium, The President moved the approval of the Accounts for 1956/1957. This was agreed.

Agenda, Point 15. In presenting the Budget, the President pointed out that the matter had already been dealt with in an earlier Delegate Meeting and asked for the approval of the Budget with the additional expenditure of kr. 1,000 asked for by the Hydrographical Committee. The Estimates for 1958/1959 were adopted with the additional kr. 1,000.

Agenda, Point 16. The President informed the Council that as regards the *ex officio* members of the Finance Committee he had nominated Mr. A. J. AGLEN as the member from the Bureau and proposed the nomination of Mr. D. ÓLAFSSON, Dr. H. VILELA, and Mr. G. J. LIENESCH. Approved.

The President proposed that the Secretary General be re-elected Editor of the *Journal du Conseil* with the assistance of Dr. HARDEN JONES and that Dr. J. H. FRASER be re-elected Editor of the Plankton Sheets. Approved.

The President also informed the Council that Dr. E. LELOUP would replace him as Chairman of the Atlantic Committee for the year 1958/1959.

Agenda, Point 17. Mr. ROLLEFSEN informed the Delegates of a letter the *ad hoc* Committee had received from the Danish Prime Minister. The reply was a negative one, but he hoped that this was not the last word from the Danish authorities. During the discussion which arose, Professor KULLENBERG suggested that further negotiations with the Danish Government should be conducted by the Bureau and

not by the *ad hoc* Committee, which had been set up owing to Dr. TÅNING being a Dane. The President suggested taking a vote on this question and with 19 votes against 11 it was approved that the *ad hoc* Committee should continue its work.

The President said that the Bureau at their last meeting had agreed to raise the honorarium of the Chairman of the Consultative Committee from kr. 1,500 to kr. 3,000 in view of his considerable work in connexion with the Consultative Committee as well as the Liaison Committee. The President asked for approval and after some discussion it was agreed.

Finally, the President drew attention to the fact that in 1960 the meeting of the International Council would take place outside Denmark and that an invitation had already been received from the USSR. If any other member country would like to invite the Council, such an invitation should be given before May 1959.

The meeting terminated at 15.50 p.m.

General Assembly, Final Meeting, Saturday, 4. October 1958, at 3.30 p. m.

Agenda, Point 18. The President opened the meeting and announced that the following telegrams had been received:—

"J'exprime mes remerciements les plus sincères.
FREDERIK R."

"J'exprime mes remerciements cordiales.
ANNA MARGRETHE TÅNING."

"On behalf of the Soviet fishery scientists accept our deepest concern on the decease of Dr. Å. VEDEL TÅNING, world-known scientist and researcher, who has done so much for the development of the Council for the Exploration of the Sea, fishery science and conservation of marine ressources.
Academy of Science of the USSR
VNIRO."

The President described briefly the Estimates for 1958/1959 approved by the Council, indicating that expenditure would exceed income by about kr. 42,288. A small committee had been asked to review the expenditure of the Council in order to see whether there were any items which could be cut out or reduced without interfering with the activities of the Council. The Committee had been satisfied that there was not much possibility for savings. The Bureau had therefore asked the Delegates to recommend to their Governments that the annual contribution to the Council be increased by 25 %, beginning with the financial year 1960/1961.

Agenda, Point 19. Dr. WENT summarized the recommendations adopted by the Council and drew attention to a Special Meeting to be held just before the Council Meeting in 1959, to review the hydrographical and biological results of the IGY surveys conducted in 1958; Dr. J. TAIT would act as Convener and Dr. CUSHING as Reporter for the biological section and Mr. A. J. LEE as Reporter in connexion with the hydrographical section. Finally, Dr. WENT said that the Bureau had decided to co-sponsor the Redfish Symposium, which would be held in Copenhagen just after the 1959 Council Meeting.

Attention was also drawn to a decision of the Bureau to co-sponsor a meeting to take place in Edinburgh in September 1959, dealing with fisheries statistics in the North Atlantic area.

Agenda, Point 20. The President announced the next Council Meeting to be opened in Copenhagen on 5. October 1959.

Agenda, Point 21. The Honorary President, Mr. A. T. A. DOBSON expressed on behalf of Dr. K. A. ANDERSSON and himself their appreciation for having been invited to this meeting.

The observers from Canada and U.S.A., Dr. P. F. ELSON and Mr. HOWARD H. ECKLES, expressed both in adequate words how much they had enjoyed being present at the meetings. The observers from the various international bodies, co-operating with the Council, all expressed kind words of appreciation of this year's Council Meeting.

Agenda, Point 22. The President concluded the meeting in the following words:—

"J'adresse mes remerciements, avec tout le respect qui leur est dû, à nos deux Présidents Honoraires, qui ont bien voulu venir nous aider dans cette réunion. J'adresse également mes remerciements à tous les Délégués des différentes pays membres et à tous les Experts, qui ont eu cette année une charge particulièrement lourde dans les différents comités scientifiques ou ils ont travaillé. Je n'oublie pas, bien entendu, de remercier aussi et surtout les présidents de comité, qui, en raison du travail chaque année plus important, ont une tâche réellement lourde à accomplir et qui l'accomplissent avec le plus grand brillot. Je tiens aussi à remercier les invités du Conseil, qui ont bien voulu nous faire l'honneur de participer à cette réunion. Je remercie les observateurs des pays non-membres ou membres du Conseil, qui étaient également présents à cette réunion. Et enfin, je ne voudrais pas oublier avec le Secrétaire Général, Dr. FRIÐRIKSSON, tout l'état majeur du bureau, les secrétaires, qui ont eu à assurer pendant plus d'une semaine un travail absolument écrasant et qui, en dépit de la tristesse qui pesait sur cette maison à cause de la disparition du Dr. TÅNING, ont assuré ce travail avec la gentilesse et l'amabilité, que tout le monde s'est toujours plu à leur reconnaître, et avec beaucoup de cran et beaucoup de courage. Je les prie toutes de recevoir ici mes bien vifs remerciements."

The meeting terminated at 17.00 p. m.

Resolutions passed by the 46th Statutory Meeting, 1958

Organization

C. Res. 1958/1:

(a) It was agreed that the Administrative Report of the various committees should continue as heretofore with suitable cross references and that the Secretary General should be given authority to edit the reports of each committee.

(b) It was also agreed that the *Annales Biologiques* should be restricted to work done under the Area Committees, the exception being work done on Shellfish, Salmon and Trout, Herring, and Gadoid Fish.

Status of ICES

C. Res. 1958/2:

It was resolved to ask the *ad hoc* Committee to continue its negotiations with the Danish Government.

Action for the Bureau

C. Res. 1958/3:

Having discussed the present state of the stocks of fish in the Baltic, the Baltic-Belt Seas Committee realizes the urgent need for international protective measures. Accordingly, it has been recommended that a meeting of Baltic member countries should be convened at a convenient place to discuss a convention for the protection of the stocks of fish in the Baltic.

Publications

C. Res. 1958/4:

It was agreed that the papers submitted to the Symposium on Salmon and Sea Trout be edited by the Rapporteur and published in full by the Council in the series *Rapports et Procès-Verbaux*. The cost of printing was estimated at about kr. 8,000.

International Herring and Sole Tagging Programmes

C. Res. 1958/5:

(a) It was considered that the International Herring Tagging Experiments conducted in 1957 and 1958 have proved of great value and it was recommended that this work should be continued in future as requirements demand. It was decided that Dr. E. Bertelsen and Mr. K. Andersen (Copenhagen) and Mr. J. Gulland (Lowestoft) should be asked to work up the material collected during the tagging experiment in 1958.

(b) It was also decided that a working group, consisting of one member from each country participating in the sole fishery of the North Sea, should be established to initiate a scheme for tagging soles on an international basis.

Records of Hydrographical Data

C. Res. 1958/6:

It was agreed:—

(a) That the scheme for hydrographic punched cards proposed in the report from the Sub-Committee for Mechanizing the Index of Hydrographic Data held by the Council be adopted;

(b) that in view of the increasing amount of data to be handled by the Service Hydrographique, mechanization of the Index in that Service should be undertaken at an estimated cost of kr. 15,650 for 1958/1959;

(c) that relevant institutions and organizations are informed about the Council's adoption of the above mentioned scheme.

Standard Methods for Salinity Determination

C. Res. 1958/7:

It was decided that further investigations into preparation of a satisfactory conductivity standard should be made in co-operation between the Standard Sea Water Service of IAPO and the Sub-Committee for Considering Standard Methods for Salinity Determination, and that the Council for this purpose, which will of necessity involve some expenses, provides a subvention which needs not exceed kr. 1,000.

Recommendation to the IGY World Data Centres for Oceanography

C. Res. 1958/8:

The Hydrographical Committee has heard with appreciation an account of the IGY World Data Centres for Oceanography and believes that the establishment of permanent World Data Centres for Oceanography would be of great value.

Special Meetings

C. Res. 1958/9:

It was agreed that a special meeting should be held on 2., 3., and 4. October 1959 prior to the next Council Meeting to review the hydrographical and biological results of the IGY surveys conducted in 1958.

Dr. J. Tait was asked to act as Convenor and Dr. D. H. Cushing (Lowestoft) was asked to undertake the task of Rapporteur of the biological section and Mr. A. J. Lee of the hydrographical section.

Improvement of Statistics

C. Res. 1958/10:

In view of the increasing use of the *Bulletin Statistique* in scientific evaluation of exploited fish stocks by the Permanent Commission and the Liaison Committee, the Statistical Committee recommends that

the Secretary General should visit those countries for which delays have been experienced in obtaining satisfactory statistics with a view to accelerating and improving the presentation of statistics by the Council. The cost will not exceed kr. 1,500. This recommendation will be reconsidered by the Bureau in May 1959.

International Co-operation

C. Res. 1958/11:

(a) It was decided to accept the invitation of ICNAF to co-sponsor a Redfish Symposium to be held in connexion with the 1959 meeting of the Council from 12. to 16. October 1959.

(b) It was also decided that an invitation from FAO to co-sponsor an Expert Meeting on Fishery Statistics in the North Atlantic Area to be held in Edinburgh from 15. to 25. September 1959 be accepted.

Press Release

C. Res. 1958/12:

It was agreed that suitable press releases regarding the work and meetings of the Council should be made regularly.

Other Recommendations

C. Res. 1958/13:

Baltic-Belt Seas Committee:

It was recommended that regular hydrographic observations should be continued by Denmark in the Bornholm Deep, near Christiansø.

Comparative Fishing Committee:

1. That, in view of the valuable results obtained so far from the "co-ordinated" programme planned for 1958, that programme be adjusted and extended as required in the light of those results as a guide to operations in 1959.

2. Recognizing that certain kinds of information can most usefully, or only, be obtained from international fishing experiments, such as those made in 1958, the value of such collaborative research vessel programmes be urged upon the member countries.

3. That a sub-committee consisting of the Chairman, with the assistance of Professor VON BRANDT, Mr. BEVERTON, and Mr. PARRISH be appointed to revise the 1958 co-ordinated programme and communicate the proposals as soon as possible to the representatives of the member countries. In this they should distinguish particularly those items which can most usefully be undertaken by research vessels working in collaboration.

4. Information obtained to date suggests that the type of top-side chafer prescribed by ICNAF influences selection less than the usual tightly fitting commercial chafer. Work should continue, however, so as to determine the most suitable type of chafer.

5. That, while copies of all the contributions should be forwarded to the Liaison Committee, a sub-committee composed of Professor VON BRANDT, Mr. PARRISH, and Mr. SÆTERSDAL be requested to make such report on them as may be possible in the time available before the Liaison Committee meets.

6. That information be collected on the amount of shrinkage undergone by commercial fish after death, paying careful attention to changes before, during, and for some considerable period after *rigor mortis*, with special reference to the changes undergone in the first hour after death, and the general conditions under which the fish are caught.

Gadoid Fish Committee:

In consequence of the acceptance by the Committee of the "Progress Report on Joint Investigations on Arctic Cod", submitted by Messrs. BEVERTON and SÆTERSDAL, it was agreed that the Chairman should call a meeting of Soviet, English, and Norwegian scientists to take place in Bergen in April 1959 in order to carry out the programme of work outlined in the Progress Report.

It is thought that such a meeting would last for a week and the expenses involved are expected to be borne by the countries concerned.

Scombriform Fish Committee:

La suggestion de M. OLAV AASEN recommandant des opérations de marquage des thons a été approuvée à l'unanimité.

Salmon and Trout Committee:

(a) It is recommended that the collection of information on fish passes should be continued and that a bibliography of papers on fish passes, published since 1930, be prepared.

(b) It is recommended that the studies on successful fish passes in relation to ecological conditions should also be pursued by participating countries.

Recommendations from the Symposium on Salmon and Sea Trout:

It is recommended:—

(a) That member countries pay special attention to the effects of predation on stocks of salmon and sea trout and that fishery workers should seek the co-operation of other scientists (e.g., ornithologists) and of others (e.g., hunters, anglers, and other sportsmen), who may be able to collect information relevant to the subject; and further that special investigations should be made into techniques of tagging suitable for the assessment of the intensity of predation.

(b) Member countries should, in the first instance, discuss this by correspondence with a view to organizing some tests in 1959.

(c) That a bibliography of tagging and marking be prepared to include references to sources of unpub-

lished data as well as to published papers and that each country be asked to give a short introductory commentary on the bibliography supplied by it.

(d) That all member countries should carry out experiments to determine the comparative value of various types of tags and methods of tagging, and that in particular, as part of this programme, teams from different countries should participate in joint tagging programmes as a test of different techniques.

(e) That as all aspects of the biology of salmon and sea trout are in need of further investigation all member countries are urged to undertake studies on production, mortality, and fishing effort, with a view to the assessment of the population dynamics of the stocks of these species.

(f) That the Salmon and Trout Committee should establish a working group to consider the problems of salmon and sea trout in the Baltic.

(g) That the working party on salmon in the Baltic meet, if possible, in Sweden in March 1959 to further their consultations.

(h) The Salmon and Trout Committee wish to report that they have benefited very greatly from the presence among them of the Canadian Observer and wish to express their appreciation; they trust that similar co-operation will be possible at future meetings of the Committee.

Shellfish Committee:

1. That the comparative examination of methods of bacteriological testing of shellfish and standards of sanitary control be continued.

2. That co-operative studies of lobster stocks off the south-west of Britain be continued.

3. That in view of the concern regarding the possibility of overfishing of stocks of *Nephrops*, further studies of commercial stocks should be made in all countries in which this fishery is important. It is recommended that members should send to the Chairman particulars of the investigations that they are making or consider desirable, for the purpose of preparing a co-operative international programme of research designed to provide a basis for conservation measures.

4. That further studies should be made of the causes of losses among stored lobsters with special reference to the occurrence of *Gaffkya*.

Hydrographical Committee:

1. The Hydrographical Committee recommends to cancel the wind charts issued in connexion with the Synoptic Hydrographic Charts, having in mind that the publication by Dietrich, Carruthers, *et al.* on "Wind Conditions over the Seas around Britain during the Period 1900—1949" will be continued.

2. Having heard the report on the meeting in Hamburg on 24.—25. June 1958 of the Sub-Committee on the Preparation of Mean Charts of the Salinity and Temperature of the Surface Layer and on the progress of the work of the Sub-Committee during the year and having noted with appreciation the valuable assistance that the Sub-Committee has received from a number of institutions, the Hydrographical Committee recommends that the Sub-Committee continues its work.

3. Considering that the Service Hydrographique of the ICES will need further assistance of the Sub-Committee for Mechanizing the Index of Hydrographic Data held by the Council in the practical steps of the introduction of the hydrographic IBM system, as well as in the application of the IBM cards in the preparation of the *Bulletin Hydrographique*, the Hydrographical Committee recommends that the Sub-Committee's work be continued under the above terms of reference.

4. In view of the need for further investigations on the electrical conductivity method for salinity determination, the Hydrographical Committee recommends that Dr. R. A. Cox be made a member of the Sub-Committee for Considering Standard Methods for Salinity Determination.

5. The Hydrographical Committee recommends:—

(a) That at the end of 1958 the Service Hydrographique prepare and issue a list and a map showing the investigations carried out under the North Atlantic Polar Front Survey;

(b) that the data collected under the above project be sent to the Service Hydrographique as early as possible.

6. The Hydrographical Committee recommends that the multi-ship investigations on the Iceland-Faroe Ridge as proposed for the month of June 1959 should be postponed until June 1960 in order (a) to allow time for the development of various mechanical or servo-mechanical recording apparatus which is now in progress and (b) to derive maximum advantage from the results of the IGY investigations. At the same time the Committee recommends the continuance or repetition during 1959 of such significant investigations as those described in papers to the 1958 meeting of the Hydrographical Committee by Messrs. Steele, Tait, Carruthers, and Lee.

Plankton Committee:

The Plankton Committee has felt the need for advice from hydrographers at its meetings and is anxious that this need should be met in future.

Budget for the Financial Year $^{1}/_{11}$ 1958—$^{31}/_{10}$ 1959

EXPENDITURE

	D. Kr.	D. Kr.
I. Incidentals		
1. President	5,000.00	
2. Chairmen of Committees	24,000.00	
		29,000.00
II. Salaries		
1. Secretary General	30,000.00	
Administrative Department:—		
2. Assistant Secretary	19,128.00	
3. Assistant	13,968.00	
Publication Department:—		
4. Assistant Secretary	19,128.00	
5. Assistant	13,968.00	
Statistical Department:—		
6. Assistant Secretary	18,048.00	
Incidental Assistance	10,000.00	
Hydrographical Department:—		
7. Hydrographer	28,848.00	
8. 1st Assistant	18,048.00	
9. Clerical Assistance	10,128.00	
10. Part-Time Assist. (P. Alnøe)	6,000.00	
11. Part-Time Assist. (I. Bondorff)	5,000.00	
		192,264.00
III. Office Expenses	48,000.00	
Mechanization of hydrographic data	11,800.00	
For 1st year	4,000.00	
Standard Methods for Salinity	1,000.00	
		64,800.00
IV. Travelling Expenses		22,000.00
V. Publications		125,000.00
VI. Pensions[1])		
I. Hansted	7,800.00	
E. Brønniche	9,804.00	
M. Rehder	9,804.00	
Contributions to Insurance and Saving	10,834.38	
		38,242.38
		471,306.38

RECEIPT

	D. Kr.	D. Kr.
I. Contributions		
Belgium	20,000.00	
Denmark	20,000.00	
Finland	10,000.00	
France	40,000.00	
German Federal Republic	40,000.00	
Iceland	20,000.00	
Ireland	15,000.00	
Italy	20,000.00	
The Netherlands	20,000.00	
Norway	20,000.00	
Poland	20,000.00	
Portugal	15,000.00	
Spain	20,000.00	
Sweden	20,000.00	
United Kingdom	40,000.00	
U.S.S.R.	40,000.00	
		380,000.00
II. Interest		
On Bank Deposits	11,000.00	
On Investments	4,644.00	
On Pension Fund	4,873.50	
		20,517.50
III. Sale of Publications		27,000.00
IV. Contribution from Woods Hole Oceanographic Institution towards collecting and publishing American observations in the *Bulletin Hydrographique*		1,000.00
Estimated Excess of Expenditure over Income		42,788.88
		471,306.38

[1]) The difference between the amount of pensions and the sum of interest yielded by the Pension Fund will be paid as a subvention to the persons concerned.

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(One member only, from each country is entitled to vote)

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the Chairman of the Near Northern Seas Committee,
the Chairman of the Atlantic Committee,
the Chairman of the Comparative Fishing Committee, and
the Chairman of the Gadoid Fish Committee.

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Annales Biologiques	**„**
Bulletin Statistique	**„**
Statistical News Letters	**„**
Journal du Conseil	**The Secretary General with the assistance of Dr. F. R. HARDEN JONES**
Bulletin Hydrographique	**The Hydrographer**
Fiches d'Identification du Zooplancton	**Dr. J. H. FRASER**

Experts engaged in Fisheries Research in the Council's Area

Name and Title	Special Subjects	Address
Belgium		
Leloup, E., Dr., Directeur de l'Institut d'Etudes Maritimes, Ostende..	Biologie de la faune marine	31. Rue Vautier, Bruxelles.
Gilis, Ch., Prof., Adjoint technique de l'Institut d'Etudes Maritimes, Ostende.....	Recherches sur le hareng guai — le hareng plein. "Overfishing"	30. Rue de Rome, Ostende.
Denmark		
Bertelsen, E., Dr., Director	Biology of marine fish	Danmarks Fiskeri- og Havundersøgelser, Charlottenlund Slot, Charlottenlund.
Andersen, K. P., Mag. scient.....	Mathematics	
Andersen, Th., Cand. mag.....	Freshwater fish. Pollution.....	
Bagge, Ole, Cand. mag.....	Marine fish.....	
Boëtius, J., Mag. scient.	Marine zoophysiology	
Christensen, O., Cand. mag.	Freshwater fish	
Dahl, J., Mag. scient.....	Freshwater fish and entomology ...	
Grøntved, J., Mag. scient.....	Phytoplankton, northern forms	
Hansen, Vagn Kr., Mag. scient. ...	Zooplankton.....	
Hermann, F., Cand. mag.	Hydrography	
Jensen, Aage J. C., Dr.....	Biology. Fluctuations in fishery yields	
Joensen, J., Mag. scient.....	Faroe fish.....	
Knudsen, H., Cand. mag.	Marine fish.....	
Larsen, K., Cand. mag.	Biology of salmon and trout	
Lund, S., Mag. scient.....	Marine algae	
Muus, Bent J., Mag. scient.....	Marine biology	
Popp Madsen, K., Cand. mag.	Marine fish.....	
Ursin, E., Mag. scient.....	Marine bottom invertebrates.....	
Rasmussen, C. J., Cand. mag.....	Trout pond farming. Eel.....	Dansk Forsøgsdamkultur, Brøns, Jylland.
Otterstrøm, C. V., Mag. scient.	Freshwater fish. Pollution	Frederiksdal, Lyngby.
Steemann Nielsen, E., Prof., Dr., Advisor to D.F.H.....	Phytoplankton	Danmarks Farmaceutiske Højskole, Universitetsparken, Copenhagen.
Thomsen, H., Cand. mag., Advisor to D.F.H.	Hydrography.....	Meteorologisk Institut, Ordrup, Charlottenlund.
Ege, V., Dr.	Racial investigations. Oceanic fish..	Carlsbergfondets Dana-Samlinger, Charlottenlund Slot, Charlottenlund.
Strubberg, A., Cand. mag.	Statistics.....	Fiskeriministeriet, Borgergade 16, Copenhagen.
Hansen, Paul M., Dr.....	Greenland cod.....	Grønlands Fiskeriundersøgelser, Charlottenlund Slot, Charlottenlund.
Nielsen, J., Cand. mag.....	Greenland salmonids and herring...	
Smidt, E. L. B., Dr.....	Greenland fish and invertebrates ...	
Kreutzmann, J.....	Biology. Greenland fisheries.....	Fiskeribiologisk Laboratorium, Godthåb, Greenland.
Spärck, R., Prof., Dr., Director....	Zoology. Oysters.....	Zoologisk Museum, Krystalgade 24, Copenhagen.
Bruun, A. F., Dr.	Marine biology. Oceanography	
Kirkegaard, J. C., Cand. mag.....	Marine fish.....	
Knudsen, J., Cand. mag.....	Marine fish. Molluscs.....	
Smed, J., Mag. scient.....	Hydrography.....	International Council for the Exploration of the Sea, Charlottenlund Slot, Charlottenlund.
Thorson, G., Prof., Dr., Director ..	Ecology of marine invertebrates ...	Marinbiologisk Laboratorium, Grønnehave, Helsingør.
Højgaard, M., Director		Danmarks Akvarium, Charlottenlund.
Mandahl-Barth, G., Dr.....		
Kiilerich, A., Mag. scient.	Hydrography of Greenland waters	Grøndalsvej 66, Copenhagen.
Lundbak, A., Cand. mag.....	Hydrography.....	Meteorologisk Institut, Toldbodvej 15, Copenhagen.

Name and Title	Special Subjects	Address
Finland		
Halme, E., Prof., Dr., Director	Plankton. Migrations of pike	Byrån f. Fiskeriundersökningar, Nätholmen, Helsinki.
Ehnholm, G., Dr.	Baltic herring	
Ryhänen, R., Mag. phil.	Ecology of whitefish in Bothnian Bay	
Toivonen, J., Mag. phil.	Ecology of pike perch	
Segerstråle, S., Dr.	Bottom fauna. Crustacea	Havforskningsinstitutets Biologiska Laboratorium, Norra Järnvägsgatan 13, Helsinki.
Luther, A., Prof., Dr.	Turbellaria	
Purasjoki, K., Mag. phil.	Plankton. Bottom fauna	
Välikangas, I., Prof., Dr.	Plankton	
Wikgren, B.-J., Prof., Dr.	Migrations of whitefish	Åbo Akademi, Åbo.
Bergman, Gösta, Mag. phil.	*Gadus morrhua*	Östra Nylands Folkhögskola, Kuggom.
Granqvist, G., Prof., Dr.	Physical oceanography	Idrottsgt. 24, Helsingfors-Tölö.
Hela, I., Prof., Director	Physical oceanography	Havsforskningsinstitutet, Observatoriegatan 2, Helsinki.
Gripenberg, Stina, Dr.	Chemistry of sea water	
Koroleff, F., Dr.	Chemistry of sea water	
Lisitzin, Eugenie, Dr.	Physical oceanography	
Nordström, S., Mag. phil.	Physical oceanography	
Palosuo, E., Dr.	Ice investigations	
Simojoki, H., Dr.	Hydrology	
Sjöblom, V., Mag. phil.	Baltic herring	
Järvi, T. H., Prof., Dr.	Salmonidae. Baltic herring	Caloniusgatan 9 C, Helsinki.
Buch, K., Prof.	Chemistry of sea water	Rönnvägen 50, Helsinki.
Palmén, Erik, Prof.	Physical oceanography	Högbergsgatan 1 B, Helsinki.
France		
Furnestin, J., Dr., Directeur	Océanographie physique et biologique	Institut Scientifique et Technique des Pêches Maritimes, 59, Avenue Raymond-Poincaré, Paris (XVIe).
Desbrosses, P., Inspecteur Général	Clupéidés. Thonidés	
Furnestin, M.-L., Madame, Dr.	Plancton	
Dardignac, J.	Sciénidés et poissons tropicaux	
Kurc, G.	Détection U.S.	
Vincent, A.	Triglidés et Aloses	
Ancellin, J., Chef de laboratoire	Hareng. Gadidés	Laboratoire de l'Institut des Pêches Maritimes, Quai de la Poste, Boulogne s/Mer (Pas-de-Calais).
Nédélec, C.	Scombriformes. Gadidés	
Bouxin, H., Sous-Directeur	Ecologie marine. Plancton littoral.	Laboratoire Maritime du Collège de France, Concarneau (Finistère).
Letaconnoux, R., Chef de laboratoire	Merlu. Thons. Sardine	74, Allé du Mail, La Rochelle.
Marteil, L.	Ostréiculture. Mytiliculture	Place du Champ de Foire, Auray (Morb.).
Trochon, P.	Ostréiculture. Mytiliculture	41, Rue du Maréchal Leclerc, La Tremblade.
Faure, L., Prof., Chef de laboratoire	Clupéidés. Crustacés	Laboratoire Lacaze-Duthiers Roscoff (Finistère).
Le Dantec, J.	Ostréiculture. Mytiliculture	63, Bld. Deganne, Arcachon (Gironde).
Lubet, P.	Mollusques	Station Biologique d'Arcachon (Gironde).
Maurin, C.	Poissons. Crustacés	6, Rue Voltaire, Sète.
Cadenat, J.	Systématique et biologie des poissons. Echinodermes	Laboratoire de Biologie Marine de Gorée, Dakar (Sénégal).
Monod, T., Prof.	Crustacés et poissons	Institut Français d'Afrique Noire, Dakar (Sénégal).
Berthois, L.	Océanographie physique. Sédiments	Ecole Nationale d'Agriculture, Rennes.
Delay, M.	Mugilidés	Office de la Recherche Scientifique et Technique d'Outre-Mer, 47, Bld. des Invalides, Paris.
Gougenheim, A.	Océanographie physique. Hydrologie	Service Hydrographique de la Marine, 13, Rue de l'Université, Paris.
Vincent-Cuaz, L.	Langoustes	Service de l'Elevage à Port-Etienne (Mauritanie).
Drach, P., Prof.	Crustacés. Ecologie néritique	Faculté des Sciences, 1, Rue Victor Cousin, Paris.
Prenant, M., Prof.	Biologie marine. Physiologie	
Teissier, G., Prof.	Biologie marine	Muséum d'Histoire Naturelle, 61, Rue de Buffon, Paris.
Fage, L., Prof.	Biologie marine	
Fontaine, M., Prof.	Physiologie des poissons migrateurs	Muséum d'Histoire Naturelle, 45, Rue Cuvier, Paris.
Lacombe, H.	Océanographie physique. Hydrologie	
Tchernia, P.	Océanographie physique. Hydrologie	

Name and Title	Special Subjects	Address
France (continued)		
Lassarat, A.	Thonidés	Service de l'Elevage, Abidjan (Côte d'Ivoire).
Le Danois, E., Dr.	Océanographie. Biologie marine	3, Rue Quinault, St. Germain-en-Laye.
Percier, A.	Technologie des engins et bateaux	Musée de la Mer, Biarritz (B.P.).
Vibert, R.	Saumon. Truite	Musée de la Mer, Biarritz (B.P.).
Germany		
Bückmann, A., Prof., Dr., Director	Fishery biology	Biologische Anstalt Helgoland, Hamburg-Grossflottbek, Elbchaussée 199.
Hempel, G., Dr.	Fishery Biology. Fish fry	Biologische Anstalt Helgoland, Hamburg-Grossflottbek, Elbchaussée 199.
Krüger, F., Prof., Dr.	Physiology	Biologische Anstalt Helgoland, Hamburg-Grossflottbek, Elbchaussée 199.
Stieve, H., Dr.	Physiology	Biologische Anstalt Helgoland, Hamburg-Grossflottbek, Elbchaussée 199.
Aurich, H., Dr.	Plankton. Fish fry	Biologische Anstalt Helgoland, List auf Sylt.
Gillbricht, M., Dr.	Plankton productivity	Biologische Anstalt Helgoland, List auf Sylt.
Kornmann, P., Dr.	Botany. Algae	Biologische Anstalt Helgoland, List auf Sylt.
Werner, B., Dr.	Zoology. Hydroids	Biologische Anstalt Helgoland, List auf Sylt.
Ziegelmeier, E., Dr.	Bottom animals	Biologische Anstalt Helgoland, List auf Sylt.
Kotthaus, A., Dr.	Fishery biology	Biologische Anstalt Helgoland, Abt. Fischereibiologie, Bremerhaven-F., F.A.-Pust-Platz.
Schmidt, U., Dr.	Fishery biology and statistics	Biologische Anstalt Helgoland, Abt. Fischereibiologie, Bremerhaven-F., F.A.-Pust-Platz.
Ludorff, W., Prof., Institutsleiter	Chemistry	Bundesforschungsanstalt f. Fischerei, Institut für Fischverarbeitung, Hamburg-Altona, Elbchaussée 92.
Antonacopulos, N., Dr.	Technological research of fishery	Bundesforschungsanstalt f. Fischerei, Institut für Fischverarbeitung, Hamburg-Altona, Elbchaussée 92.
Hennings, Chr., Dr.	Physical chemistry	Bundesforschungsanstalt f. Fischerei, Institut für Fischverarbeitung, Hamburg-Altona, Elbchaussée 92.
Junker, M., Dr.	Physiology	Bundesforschungsanstalt f. Fischerei, Institut für Fischverarbeitung, Hamburg-Altona, Elbchaussée 92.
Kreuzer, R., Dr.	Bacteriology	Bundesforschungsanstalt f. Fischerei, Institut für Fischverarbeitung, Hamburg-Altona, Elbchaussée 92.
Neb, K. E., Dr.	Physical chemistry	Bundesforschungsanstalt f. Fischerei, Institut für Fischverarbeitung, Hamburg-Altona, Elbchaussée 92.
Wünsche, G., Dr.	Chemistry	Bundesforschungsanstalt f. Fischerei, Institut für Fischverarbeitung, Hamburg-Altona, Elbchaussée 92.
Meyer-Waarden, P. F., Prof., Dr., Institutsleiter	Inshore fisheries. Electric fishing	Bundesforschungsanstalt f. Fischerei, Institut für Küsten- und Binnenfischerei, Hamburg 36, Neuer Wall 72.
Halsband, E., Dr.	Electric fishing	Bundesforschungsanstalt f. Fischerei, Institut für Küsten- und Binnenfischerei, Hamburg 36, Neuer Wall 72.
Kühl, H., Dr.	Hydrobiology. Fouling	Bundesforschungsanstalt f. Fischerei, Institut für Küsten- und Binnenfischerei, Hamburg 36, Neuer Wall 72.
Lühmann, M., Dr.	Inshore fisheries	Bundesforschungsanstalt f. Fischerei, Institut für Küsten- und Binnenfischerei, Hamburg 36, Neuer Wall 72.
Mann, H., Dr.	Inshore fisheries. Physiology	Bundesforschungsanstalt f. Fischerei, Institut für Küsten- und Binnenfischerei, Hamburg 36, Neuer Wall 72.
Tiews, K., Dr.	Inshore fisheries. Tuna	Bundesforschungsanstalt f. Fischerei, Institut für Küsten- und Binnenfischerei, Hamburg 36, Neuer Wall 72.
von Brandt, A., Prof., Dr. u. Director	Fishing implements. Preservation of fish nets	Bundesforschungsanstalt f. Fischerei, Institut für Netz- und Materialforschung, Hamburg 36, Neuer Wall 72.
Klust, G., Dr.	Fishing implements. Preservation of nets	Bundesforschungsanstalt f. Fischerei, Institut für Netz- und Materialforschung, Hamburg 36, Neuer Wall 72.
Messtorff, J., Dipl. Biol.	Comparative fishing	Bundesforschungsanstalt f. Fischerei, Institut für Netz- und Materialforschung, Hamburg 36, Neuer Wall 72.
Schärfe, J., Dr.	Behaviour of fishes	Bundesforschungsanstalt f. Fischerei, Institut für Netz- und Materialforschung, Hamburg 36, Neuer Wall 72.
Steinberg, R.	Behaviour of fishes	Bundesforschungsanstalt f. Fischerei, Institut für Netz- und Materialforschung, Hamburg 36, Neuer Wall 72.
Lundbeck, J., Prof., Dr., Director	Fishery biology. Statistics	Bundesforschungsanstalt f. Fischerei, Institut für Seefischerei, Hamburg 36, Neuer Wall 72.
Bohl, E., Dipl. Biol.	Herring. Fishery biology	Bundesforschungsanstalt f. Fischerei, Institut für Seefischerei, Hamburg 36, Neuer Wall 72.
Bohl, H.-J., Dr.	Fishery biology	Bundesforschungsanstalt f. Fischerei, Institut für Seefischerei, Hamburg 36, Neuer Wall 72.
Krefft, G., Dr.	Fishery biology. Herring. Ichthyology	Bundesforschungsanstalt f. Fischerei, Institut für Seefischerei, Hamburg 36, Neuer Wall 72.
Meyer, A., Dr.	Fishery biology. Cod	Bundesforschungsanstalt f. Fischerei, Institut für Seefischerei, Hamburg 36, Neuer Wall 72.
Sahrhage, D., Dr.	Fishery biology	Bundesforschungsanstalt f. Fischerei, Institut für Seefischerei, Hamburg 36, Neuer Wall 72.
Schnakenbeck, W., Prof., Dr.	Fishery biology	Bundesforschungsanstalt f. Fischerei, Institut für Seefischerei, Hamburg 36, Neuer Wall 72.
Schubert, K., Dr.	Fishery biology. Herring. Whaling	Bundesforschungsanstalt f. Fischerei, Institut für Seefischerei, Hamburg 36, Neuer Wall 72.
Wulff, A., Dr.	Fishery biology. Plankton	Bundesforschungsanstalt f. Fischerei, Institut für Seefischerei, Hamburg 36, Neuer Wall 72.
Böhnecke, G., Dr., Director	Hydrography	Deutsches Hydrographisches Institut, Hamburg 4, Bernhard-Nocht Strasse 78.
Joseph, I., Dr.	Hydrography	Deutsches Hydrographisches Institut, Hamburg 4, Bernhard-Nocht Strasse 78.
Kalle, K., Prof., Dr.	Marine chemistry	Deutsches Hydrographisches Institut, Hamburg 4, Bernhard-Nocht Strasse 78.
Koopmann, G., Dr.	Hydrography	Deutsches Hydrographisches Institut, Hamburg 4, Bernhard-Nocht Strasse 78.
Neumann, H., Dr.	Oceanographical observations	Deutsches Hydrographisches Institut, Hamburg 4, Bernhard-Nocht Strasse 78.
Rogalla, E., Dr.	Hydrography	Deutsches Hydrographisches Institut, Hamburg 4, Bernhard-Nocht Strasse 78.
Weidemann, H., Dr.	Hydrography. Instruments	Deutsches Hydrographisches Institut, Hamburg 4, Bernhard-Nocht Strasse 78.
Wohlenberg, E., Dr.	Ecology of inshore waters	Forschungsstelle Westküste, Husum, Nissenhaus.
Schäfer, W., Dr.	Ecology of benthos	Forschungsinstitut "Senckenberg am Meer", Wilhelmshaven, Schleuseninsel.
Harder, W., Dr.	Behaviour of plankton. Anatomy	Institut f. Fischereibiologie der Universität Hamburg, Hamburg 36, Holstenwall 24.
Lillelund, K., Dr.	Freshwater and brackish water fishes	Institut f. Fischereibiologie der Universität Hamburg, Hamburg 36, Holstenwall 24.

Name and Title	Special Subjects	Address
Germany (continued)		
Friedrich, H., Prof., Dr., Director	Marine ecology	Institut f. Meeresforschung, Bremerhaven-G., Am Handelshafen 12.
Brandes, C.-H., Dr.	Plankton. Parasitolgy of marine fishes	
Dietrich, R., Dr.	Chemistry of fishes	
Höhnk, W., Dr.	Marine fungi	
Lüneburg, H., Dr.	Hydrography. Marine chemistry, especially estuaries	
Meyer, V., Dr.	Bacteriology	
Hansen, W., Dr.	Hydrodynamics	Institut f. Meereskunde der Universität, Hamburg 13, Abteistrasse 15.
Dietrich, G., Prof., Dr., Director	Hydrography	Institut f. Meereskunde der Universität, Kiel, Hohenbergstrasse 2.
Banse, K., Dr.	Plankton	
Hoffman, C., Prof., Dr.	Botany	
Kändler, R., Prof., Dr.	Fisheries biology	
Krauss, W., Dr.	Hydrography	
Krey, J., Prof., Dr.	Plankton productivity	
Schlieper, C., Prof., Dr.	Zoology. Physiology	
Thurow, F., Dr.	Fishery biology	
Kosswig, C., Prof., Dr., Director	Hydrobiology	Zoologisches Staatsinstitut, Hamburg 13, Bornplatz 5.
Caspers, H., Prof., Dr.	Hydrobiology	
Remane, A., Prof., Dr., Director	Zoology	Zoologisches Institut der Universität Kiel, Kiel, Hegewischstrasse 3.
Schulz, E., Dr.	Ecology of bottom fauna	
Great Britain		
England		
Wimpenny, R. S., M. Sc., Director	Plankton ecology. Plaice biology	Fisheries Laboratory, Lowestoft, E. Suffolk.
Beverton, R. J. H., M. A.	Population studies of demersal fish stocks	
Birkett, L., B. Sc.	North Sea benthos. Hake biology	
Blacker, R. W., B. Sc.	Arctic benthos and haddock	
Bolster, G. C., B. A.	Pelagic fish	
Burd, A. C., B. Sc.	Pelagic fish	
Cattley, J. G., M. Sc.	Zooplankton	
Cole, H. A., Dr.	Inshore waters. Shellfish	
Corlett, J., M. Sc.	Arctic plankton	
Cushing, D. H., Dr.	Plankton studies. Echo-sounding	
Gulland, J. A., B. A.	Population studies of demersal fish stocks	
Harden Jones, F. R., Dr.	Fish behaviour	
Hill, H. W., B. Sc.	Hydrography (Arctic)	
Lee, A. J., B. A.	Hydrography (Arctic)	
Margetts, A. R., M. A.	Comparative fishing. Fish migrations	
Richardson, I. D., B. Sc.	Pelagic fish	
Shelbourne, J. E., B. Sc.	Biology of fish eggs and larvae	
Simpson, A. C., B. Sc.	Plaice	
Taylor, M. E. V., B. Sc.	Chemical oceanography	
Trout, G. C., B. Sc.	Arctic cod and redfish	
Vaux, D., B. Sc.	Hydrography (Near waters)	
Woodhead, P. M. J., B. Sc.	Endocrinology of fish	
Russell, F. S., F. R. S., Director	Zooplankton. Hydromedusae	Marine Biological Association, Citadel Hill, Plymouth.
Abbott, B. S., Dr.	Biophysics of marine organisms	
Alexandrowicz, J. S., Dr.	Muscle receptor elements and heart inervation in crustaceans	
Armstrong, F. A. J.	Chemical oceanography	
Carlisle, D. B., Dr.	Endocrinology of marine animals. Ascidians	
Cooper, L. H. N., Dr.	Chemical and physical oceanography	
Corbin, P. G., B. A.	Zooplankton. Fishes	
Forster, G. R., B. Sc.	Underwater studies of rock fauna	
Harvey, H. W., Dr., F. R. S.	Fertility and chemical constitution of sea water	
Holme, N. A., M. A.	Bottom fauna. Lamellibranchs	
Nicol, J. A. C., Dr.	Physiology of marine animals. Luminescence	

Name and Title	Special Subjects	Address
Great Britain (continued)		
Parke, Mary, W., Dr.	Algae	Marine Biological Association, Citadel Hill, Plymouth.
Spooner, G. M., M. A.	Shore ecology. Amphipods, isopods, insects	
Wilson, D. P., Dr.	Ecology of larval development and settlement. Marine aquaria	
Hardy, A. C., Prof., F. R. S.	Fisheries and plankton	Department of Zoology, Oxford University, Oxford.
Carruthers, J. N., Dr.	Hydrography	The National Institute of Oceanography, Wormley, Near Godalming, Surrey.
Cox, Roland A., Dr.	Hydrography	
Mackintosh, N. A., Dr.	Whaling research	
Butcher, R. W., Dr.	Systematics of nanoplankton algae	Fisheries Laboratory, Burnham-on-Crouch, Essex.
Hancock, D. A., B. Sc.	Oyster pests. White weed, whelks, cockles	
Hepper, B. T., B. Sc.	Lobsters. *Mytilicola*. Mussel culture	
Mistakidis, M. N., B. Sc.	Prawns, shrimps, and crabs	
Waugh, G. D., B. Sc.	Oyster production	
Wood, P. C., B. Sc.	Sanitary control. Oyster cleansing	
Baird, R. H.	Escallops	Fisheries Experiment Station, Conway, Caernavonshire.
Reynolds, N., Dr.	Sanitary control. Mussel cleansing	
Walne, P. R., B. Sc.	Oyster rearing	
Burdon-Jones, C., Dr.	Protochordata embryology	Marine Biological Station, University College of North Wales, Bangor, Caernavonshire.
Crisp, D. J., Dr.	Cirripedes	
Jones, W. E.	Algal ecology	
Spencer, C. P., Dr.	Algal biochemistry	
Jones, W. C., M. A.	Physiology of sponges	Department of Zoology, University College of North Wales, Aberystwyth.
Erichsen Jones, J., Dr.	Toxicity of metallic salts to fish	
Frost, W. E., Dr.	Eel, salmon and sea trout	Freshwater Biol. Assoc., The Ferry House, Far Sawrey, Ambleside, Westmorland.
Le Cren, E. D., M. A.	Trout, sea trout and salmon	
Bowers, A. B., B. Sc.	Fish and fisheries	Marine Biological Station, University of Liverpool, Port Erin, Isle of Man.
Bruce, J. R., M. Sc.	Manx marine fauna	
Colman, J. S., M. A.	Shore ecology, Chaetognaths	
Jones, N. S., Dr.	Benthos and fish food	
Kain, Joanna, Dr.	Algology	
Slinn, D. J., B. Sc.	Hydrography. Fish parasites	
Williamson, D. I., Dr.	Zooplankton	
Jones, J. W., Dr.	Sex in salmon	Department of Zoology, The University, Liverpool.
Crofton, H. O., Dr.	Parasitism in trout	The University, Bristol.
Spaul, E. A., Prof.	Parasitism in fish	Department of Zoology, The University, Leeds.
Hobson, A. D., Prof., F. R. S. E.	General marine zoology. Parasitology	King's College, University of Durham, The Dove Marine Laboratory, Cullercoats, Northumberland.
Allen, J. A., B. Sc.	Mollusca, inshore	
Bull, H. O., Dr.	Fish behaviour. General marine fauna	
Evans, F., B. Sc.	Mollusca, inshore	
Alabaster, J. S., B. Sc.	Salmon investigations	Ministry of Agriculture, Fisheries & Food, Whitehall Place, London, S.W. 1.
Allan, I. R. H., B. A.	Salmon investigations	
Hartley, W. G., B. Sc.	Salmon investigations	
Pentelow, F. T. K., M. A.	Salmon investigations	
Stott, B.	Salmon investigations	
Swain, A., B. Sc.	Salmon investigations	
Knight-Jones, E. W., Prof.	Marine invertebrates. Larvae	University College, Swansea.
Scotland		
Lucas, C. E., Dr., F. R. S. E., Director	Marine biology. Plankton	Scottish Home Department, Marine Laboratory, Victoria Road, Torry, Aberdeen.
Wood, H., Dr., F. R. S. E., Deputy Director	Herring	
Baxter, I. G., B. Sc.	Herring	
Blaxter, J. H. S., B. A.	Herring	
Craig, R. E., B. Sc.	Physics. Hydrography	
Dickson, W., B. Sc.	Fisheries engineering	
Fraser, J. H., Dr., F. R. S. E.	Plankton	
Johnston, R., Dr.	Marine chemistry	
Jones, R., B. Sc.	Haddock	

Name and Title	Special Subjects	Address
Great Britain (continued)		
KABATA, Z., B. Sc.	Fish parasites	Scottish Home Department, Marine Laboratory, Victoria Road, Torry, Aberdeen.
MCINTYRE, A. D., B. Sc.	Halibut. Bottom fauna	
MASON, J., Dr.	Bottom fauna. Crustacea	
PARRISH, B. B., B. Sc.	Herring	
PERKINS, E. J., B. Sc.	Plankton	
POPE, J. A., M. A.	Statistics	
RAE, B. B., Dr.	Flatfish	
RITCHIE, A., Dr., F. R. S. E.	Seining	
SAVILLE, A., B. Sc.	Plankton (fish eggs and larvae)	
SMITH, I. W., Dr.	Salmon	
STEELE, J. H., B. Sc.	Hydrography. Productivity	
TAIT, J. B., Dr., F. R. S. E.	Hydrography	
THOMAS, H. J., Dr.	Bottom fauna. Crustacea	
PYEFINCH, K. A., M. A., F. R. S. E., Officer-in-charge	Salmon, trout, and zooplankton	Scottish Home Department, Brown Trout Laboratory, Pitlochry.
BROOK, A. J., B. Sc., Ph. D.	Botany, phytoplankton	
HOLDEN, A. V., B. A.	Freshwater chemistry	
MILLS, D. H., B. Sc.	Salmon	
MORGAN, N. C., B. Sc.	Bottom fauna (freshwater)	
MUNRO, W. R., B. Sc.	Trout	
STUART, T. A., B. Sc.	Trout	
MACFARLANE, P. R. C., B. Sc., Chief Inspector Salmon Fisheries	Salmon	Scottish Home Department, St. Andrew's House, Edinburgh 1.
BARY, B. M., M. Sc., Ph. D.	Plankton	Scottish Marine Biological Association, Oceanographic Laboratory, 78, Craighall Road, Edinburgh 5.
COLEBROOK, J. M., B. Sc.	Plankton	
GLOVER, R. S., B. Sc.	Plankton	
HENDERSON, G. T. D., D.S.C., Ph. D., F. R. S. E.	Plankton	
ROBINSON, G. A., M. A.	Plankton	
VANE, F. R., M. Sc.	Plankton	
MORTIMER, C. H., D. Sc., Director	Hydrography	Scottish Marine Biological Association, Marine Station, Millport, Isle of Cumbrae.
ORR, A. P., D. Sc., A. R. I. C., F. R. S. E., Deputy Director	Plankton	
BAGENAL, T. B., B. A.	Fish	
BARNES, H., Ph. D., D.Sc., F. R. I. C.	Oceanography. Biochemistry	
DROOP, M. R., Ph. D.	Microbiology	
EDWARDS, C., B. Sc.	Plankton	
MARSHALL, SHEILA, M., D. Sc., F. R. S. E.	Plankton	
MILLAR, R. H., Ph. D., F. R. S. E.	Oysters. Ascidians	
PIKE, R. B., Ph. D.	Crustacea	
POWELL, H. T., B. Sc.	Algology	
STEPHEN, A. C., Dr., F. R. S. E.	Marine bottom fauna. British cephalopods	Royal Scottish Museum, Edinburgh.
FRIEND, G. F., M. A., B. Sc., F. R. S. E.	Ecology, morphometrics and systematics of salmonid fish	Zoology Department, Edinburgh University.
KILLE, R. A., B. Sc., Ph. D.	Fertilization of the lamprey egg	
SWAN, M. A., M. B.	Scales and otoliths of salmonid fish	
HENDERSON, A. E., B. Sc.	Freshwater biology	Zoology Department, Glasgow University.
HUNTER, W. RUSSELL, Dr.	Freshwater biology	
OWEN, G. O., B. Sc.	Marine biology	
SLACK, H. D., Dr.	Freshwater biology	
TURNBULL, E. R., Miss, B. Sc.	Parasites of freshwater fishes	
WEATHERLY, A. H., B. Sc.	Freshwater biology	
YONGE, C. M., Prof.	Marine biology	
CONWAY, E., Mrs., Dr.	Marine foreshore ecology	Botany Department, Glasgow University.
NEILL, R. M., Dr., F. R. S. E.	Salmon	Zoology Department, Aberdeen University.
ORKIN, P. A., B. Sc.	Elasmobranchs	
WYNNE-EDWARDS, V. C., Prof.	Freshwater fish	
ARNOLD, D. C., M. A., B. Sc.	Oecology of bottom-living marine organisms	Gatty Marine Laboratory and Zoology Department, St. Andrews University.
BLACKLER, M. C. H., B. Sc., Ph. D.	Marine algology	
DODD, J. M., B. Sc., Ph. D.	Comparative endocrinology of elasmobranchs	

Name and Title	Special Subjects	Address
Great Britain (continued)		
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Horridge, G. A., M. A., Ph. D.	Nerve physiology of marine annelids and crustacea	
Monkhouse, B. J., B. Sc.	Biochemistry of the thyroid gland in elasmobranchs	
Perks, A. M., B. A.	Pituitary physiology in elasmobranchs	
Iceland		
Friðriksson, Á., Dr., Secretary General	Herring. Statistics	ICES, Charlottenlund, Denmark.
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Einarsson, H., Dr.	Herring. Fish larvae	
Hallgrímsson, I., Mag. scient.	Zooplankton	
Jakobsson, J., B. Sc.	Herring. Fisheries technology	
Jónsson, E.	Herring. Age determination	
Magnússon, J., Dr.	Redfish	
Oskarsson, I.	Cod. Age determination. Marine molluscs	
Sigurðsson, A., Mag. scient.	Flatfish. Marine bottom invertebrates	
Stefánsson, U., Mag. scient.	Hydrography. Chemistry of sea water	
Thorðardóttir, Th., Mag. scient.	Phytoplankton	
Gudjónsson, Th., Mag. scient., Inspector of Freshwater Fishes	Salmon and trout	Tjarnagata 10, Reykjavik.
Ireland		
Went, A. E. J., D. Sc., Ph. D., Inspector of Fisheries and Scientific Adviser	Salmon and trout. History of fishing methods	Department of Lands, Fisheries Division, 3, Cathal Brugha Street, Dublin.
Gibson, F. A., Ph. D., Assistant Inspector	Salmon and shellfish	
Hewetson, Ann, M. Sc., Biologist	Salmon	
McGrath, C. J., B. E., I. M. I. C. E. I., Assistant Engineer	Fish passes and inland fisheries	
Ó Meallán, Seumas, B. E., I. M. I. C. E. I., Inspector of Fisheries and Engineer	Fish passes	
Toner, E. D., M. Sc., Assistant Inspector	Herring, oyster, and inland fisheries	
Twomey, Eileen, M. Sc., Assistant Inspector	Salmon and trout	
Humphries, Carmel, Prof., D. Sc.	Trout	University College, Dublin.
Poole, H. H., Sc. D.	Sub-marine illumination	Royal Dublin Society, Ballsbridge, Dublin.
Piggins, David, J., B. Sc., Biologist	Salmon and trout	Salmon Research Trust Inc., Treanlaur, Newport, Co. Mayo.
Roycroft, E. N., M. Sc., Biologist	Freshwater fishes	Inland Fisheries Trust Inc., Fanure Fish Farm, Roscrea, Co. Tipperary.
Italy		
Bini, G., Prof.	Biology	Consiglio Nazionale delle Ricerche, Piazzale delle Scienze 7, Roma.
D'Ancona, U., Prof., Dr., Director	Biology	Istituto di Zoologia e Anatomia Comparata, Università di Padova, Padova.
Picotti, Mario, Prof., Director	Chemical oceanography. Hydrography	Istituto Sperimentale Talassografico, Viale R. Gessi 2, Trieste.
Faganelli, A., Prof., Dr.	Sediments	
Spartá, A., Prof., Dr., Director	Biology	Istituto Sperimentale Talassografico, Messina.
Tonolli, V., Prof., Dr., Director	Biology	Istituto di Idrobiologia "Marco de Marchi", Pallanza (Novara).
Trotti, L., Prof., Dr.	Biology	Centro Talassografico del Tirreno, Via Balbi 10, Genova.
Maldura, Carlo, Prof., Dr., Director	Marine biology. General hydrology	Laboratorio Centrale di Idrobiologia, Piazza Borghese 91, Roma.

Name and Title	Special Subjects	Address
Netherlands		
Korringa, P., Dr., Director	Coordination of fishery investigations. Shellfish research *ad interim*	Rijksinstituut voor Visserijonderzoek (Netherlands Institute for Fishery Investigations), Haringkade 1, IJmuiden.
Boerema, L. K.	Demersal fisheries (plaice, sole)	
Deelder, C. L., Dr.	IJsselmeer fishery. Fish migration	
Ligny, W. de	Serology of fish	
Postuma, K. H.	Herring investigations	
Roessingh, M.	Demersal fisheries (whiting, sandeel)	
Roskam, R. Th.	Chemical and bacteriological research related to fishery problems	
Willemsen, J.	Freshwater fisheries. Fish culture (pike)	
Zijlstra, J. J.	Herring investigations	
Drinkwaard, A. C.	Oyster research. Ecology of oyster beds	Rijksinstituut vor Visserijonderzoek, Field Laboratory, Reepweg, Wemeldinge (Z).
Vlasblom, A. G.	Oyster research. Artificial breeding	
Reuter, J., Dr.	Preservation of fish nets	Visserij-Proefstation, Maliebaan 103, Utrecht.
Grijns, A., Dr.	Bacteriology. Oyster and mussel cleansing	Lab. Bestuur der Visserijen op de Zeeuwse Stromen, Bergen op Zoom.
Mameren, J. van	Technological research of fishery products	Central Instituut vor Voedingsonderzoek, Haringkade 1, IJmuiden.
Luypen, A. F. M. G.	Technological research of fishery products	
Termijtelen, J. W., Vice-Admiral, Director	Hydrography	Kon. Nederlands Meteorol. Inst., Oceanografische Afd., De Bilt.
Groen, P., Prof., Dr.	Hydrography	
Verwey, J., Dr., Director	Marine ecology	Zoölogisch Station, Den Helder.
Blok, A. de	Marine ecology (periodicity)	
Dudok van Heel, W. H.	Marine ecology	
Postma, H., Dr.	Chemical oceanography	
Westenberg, J., Dr.	Theoretical biology	
Norway		
Rollefsen, G., Director	Cod. Hatching and rearing	Fiskeridirektoratets Havforskningsinstitutt, Postbox 189, Bergen.
Aasen, O.	Sharks. Tuna. Mackerel. Tagging	
Berge, G.	Phytoplankton. Production	
Bratberg, E.	Redfish	
Devold, F.	Herring	
Dragesund, O.	Herring. Tagging	
Eggvin, J., Dr.	Physical oceanography	
Gundersen, K.	Zooplankton. Sprat. Shellfish	
Hylen, A.	Cod	
Ljøen, R.	Physical oceanography	
Midttun, L.	Physical oceanography	
Olsen, S.	Saithe. Halibut	
Rasmussen, B., Dr.	Prawn. Seal. Arctic research	
Revheim, A.	Mackerel	
Sundnes, G.	Physiology of fish	
Sætersdal, G.	Cod. Haddock	
Wiborg, K. F., Dr.	Zooplankton	
Østvedt, O.-J.	Herring	
Dannevig, G.	Sprat. Hatching and rearing. Shellfish	Statens Biologiske Stasjon, Flødevigen, pr. Arendal.
Dannevig, Alf, Dr.	Hatching and rearing of marine fish and lobster. Fish eggs and larvae	
Hansen, S.	Rearing of marine fish	
Løversen, R.	Investigations of 0-group gadoid fish. Marking experiments	
Otterbech, F., Cand. real.	Eggs and larvae of marine fish. Tagging experiments. Oyster culture	
Ruud, Johan, T., Dr., Prof.	Whaling research. Zooplankton	Universitetet i Oslo, Institutt for Marin Biologi, Avd. A, Frederiksgt. 5, Oslo.
Beyer, F.	Zooplankton	
Enge, Kåre	Fish taxonomy	

Name and Title	Special Subjects	Address
Norway (continued)		
Føyn, E., Dr.	Chemistry of sea water	Universitetet i Oslo, Institutt for Marin Biologi, Avd. A, Frederiksgt. 5, Oslo.
Lea, E.	Herring research. Fish tags	
Sømme, Olaug M., Mrs.	Marine bacteriology	
Braarud, T., Dr., Prof.	Phytoplankton ecology and taxonomy	Universitetet i Oslo, Institutt for Marin Biologi, Avd. B, Oslo-Blindern.
Gaarder, Karen R., Mrs.	Phytoplankton ecology and taxonomy	
Halldal, Per	Phytoplankton physiology and ecology	
Hasle, Grethe Rytter, Mrs.	Phytoplankton ecology	
Jonsgård, Å.	Whale biology	Statens Institutt for Hvalforskning, Frederiksgt. 3, Oslo.
Oynes, P.	Whale biology	
Mosby, H., Dr., Prof.	Physical oceanography	Geofysisk Institutt, Allégaten 70, Bergen.
Sælen, Odd H.	Physical oceanography	
Løkensgard, T.	Growth analysis. Biology of pike	Landbruksdepartementet, Oslo.
Jensen, K. W.	Cultivation of forest lakes. Feeding of trout fry	Ferskvannsfisket, Vitensk. Avd., Sarsgate 1, Oslo.
Rosseland, L.	Biology of salmon and trout	
Sømme, S.	Biology of salmon and sea trout	Eksveien 19, Røa.
Sivertsen, E., Dr.	Biology of eel. Seal	Trondheim Museum, Trondheim.
Rustad, D.	Hatching and rearing of plaice. Marine biology	Biologisk Stasjon, Trondheim.
Berg, M.	Fish food, esp. in lakes	Tromsø Museum, Tromsø.
Fjeldstad, E. J., Dr., Prof.	Physical oceanography	Oseanografisk Institutt, Universitetet Blindern, Oslo.
Brattström, H., Dr., Prof.	Marine ecology	Universitetet i Bergen, Biologisk Stasjon, Espegrend.
Tambs Lyche, H.	Marine ecology	
Poland		
Cieglewicz, W., Prof., Dr., Director	Marine biology	Sea Fisheries Institute, Aleja Zjednoczenia 1, Gdynia.
Demel, K., Prof., Dr., Scientific Director	Marine biology. Benthos	
Fruczek, Z., Mag., Director	Fisheries economy	
Chrzan, F., Prof., Dr.	Salmonidae	
Ciszewski, P., Mag.	Zooplankton	
Elwertowski, J., Mag.	Sprat	
Filarski, J.	Hydrography	
Filuk, J., Mag.	Freshwater fish	
Głowińska, A., Mme	Hydrography	
Janko, H., Mag.	Fishing grounds	
Klimaj, A., Inz.	Fishing grounds	
Kujawa, S.	Zoology	
Laszczynski, S., Mag.	Fisheries economy	
Mańkowski, W., Prof., Dr.	Marine biology. Plankton	
Mickiewicz, S., Mag.	Fisheries economy	
Mulicki, Z., Prof., Dr.	Bottom fauna. Ecology	
Noetzel, B.	Fisheries economy	
Okonski, S., Inz.	Fishing gear	
Orlowski, J., Mag.	Fisheries economy	
Popiel, J., Dr.	Herring	
Reimann, Z., Mag.	Flatfish	
Ringer, Z.	Algae	
Romanski, J., Mag.	Fish culture	
Rutkowicz, S., Mag.	Cod	
Sadowski, S., Mag.	Fishing gear	
Strzyzewska, K., Inz.	Fish food	
Strzyzewski, W., Inz.	Fishing gear	
Szatybelko, M., Inz.	Fishing gear	
Wiktor, J., Mag.	Biology. Ichthyology	
Wiktor, K., Dr.	Zooplankton	
Wojan, S., Inz.	Fishing gear	
Zaucha, J., Mag.	Fishing gear	
Zembrzuska, D., Mag.	Phytoplankton	
Zmudzinski, L., Mag.	Bottom fauna	
Zukowski, Cz., Inz.	Freshwater fish	
Zarnecki, S., Dr.	Freshwater fish	High School of Agriculture, Kraków.
Zebrowski, Z., Kpt., Director	Fishing gear	"Dalmor" Deep Sea Fishing Co., Gdynia.

Name and Title	Special Subjects	Address
Portugal		
Vilela, H., Directeur	Poissons scombriformes. Crustacés et mollusques	Instituto de Biologia Marítima, Cais do Sodré, Lisboa.
Barraca, Ivone, Mme	Poissons pélagiques	
Pinto, J. dos Santos	Poissons pélagiques. Salubrité des animaux marins	
Ramalho, A. M.	Poissons (Clupéidés)	
Ruivo, M.	Poissons démersaux. Bio-océanographie	
Nunes-Ruivo, Lidia, Mme	Copépodes parasites. Crustacés	Faculdade de Ciências (Zoologia), Lisboa.
Ricardo Jorge, A., Prof.	Zoologie (Vermes)	
Sacarrão, G.	Céphalopodes (Embryologie)	
Candeias, A.	Plancton (Copépodes)	Faculdade de Ciências (Departamento de micologia), Lisboa.
Cruz, J. M.	Clupéidés	Faculdade de Ciências (Zoologia), Porto.
Frade, F., Prof.	Poissons (Thonidés)	Centro de Zoologia, Rua da Junqueira 14, Lisboa.
Marques, Emerita, Mme	Copépodes	
Monteiro, R.	Poissons pélagiques	
Franca, P. da	Poissons (Merlus)	Missão de Biologia Marítima, Largo do Figueiredo, 1 r/c, Lisboa.
Silva, Estela, Mme	Phytoplancton	
Soviet Union		
Dmitriev, N. A., Prof.	Control of fisheries (the Baltic)	Institute of Marine Fisheries and Oceanography of the U.S.S.R. (VNIRO), Verkhne-Krasnoselskaya 17, Moscow, B. 140.
Borodatov, V. A.	Commercial fish of Distant Northern Seas	
Dementjeva, T. F., Mrs.	Clupeidae and cod of the Baltic	
Dorofeev, S. V., Prof.	Marine mammals of the North Atlantic	
Fedosov, M. V.	Hydrochemistry. Problems of the International Geophysical Year	
Gorshkova, T. I., Mrs.	Bathymetry and floors of the Baltic and the Distant Northern Seas	
Izhevsky, G. K.	Fisheries oceanography	
Karpevich, A. F., Dr., Mrs.	Acclimatization	
Kireeva, M. S., Mrs.	Algae of the Barents Sea and the White Sea	
Manteufel, B. P., Prof.	Plankton. Atlantic herring. Behaviour of fish	
Marty, Ju. Ju., Dr.	Clupeidae of the North Atlantic	
Moiseev, P. A., Prof.	Gadoid fish	
Naumov, V. M.	Commercial fish of the North Sea and the Baltic	
Shparlinski, V. M.	Statistics of commercial fisheries	
Treschev, A. I.	Techniques of commercial fisheries	
Zaitsev, G. N.	Dynamics of water masses of the Distant Northern Seas	
Jashnov, V. A., Prof.	Zooplankton of northern seas	Faculty of Biology and Paedology, Moscow State University.
Nikolsky, G. V., Prof., Corr. Mem. Acad. Sci. U.S.S.R.	Biology of fish. Salmonids. Theoretical research of fisheries	
Zatsepin, V. I.	Benthos of the Barents Sea	
Zenkevich, L. A., Corr. Mem. Acad. Sci. U.S.S.R.	Invertebrates	
Dobrovolsky, A. D., Prof.	Hydrology of the North Atlantic	Faculty of Geography, Moscow State University.
Zubov, N. N., Prof., Rear-Admiral	Hydrology of the Polar Basin and adjacent seas	
Kryzhanovsky, S. G., Dr.	Morphology of fish	Institute of Animal Morphology, Academy of Sciences of the U.S.S.R., Bolshaya Kaluzhskaya Ul. 33, Moscow, D-1.
Radakov, D. V.	Commercial fish of the North Sea	
Kriss, A. E., Prof.	Distributions of microorganisms in northern seas	Institute of Microbiology, Academy of Sciences of the U.S.S.R., 33, Zeninsky prospect, Moscow, D-1.

Name and Title	Special Subjects	Address
Soviet Union (continued)		
Bogorov, B. G., Prof.	Plankton of the North Atlantic	Institute of Oceanography, Academy of Sciences of the U.S.S.R. (IOAN), Luzhnikovskaya 8, Moscow, J-127.
Klenova, M. V., Prof., Mrs.	Marine geology	
Rass, T. S., Prof.	Morphology and embryology of fish	
Borisov, P. G., Prof.	Fishery research in the Baltic	Moscow Technical Institute of Fisheries (Mosrybvtuz), Prjanishnikova Ul. 2, Moscow, D-8.
Bogdanov, A. S.	Fishery research	
Bruevich, S. V.	Hydrochemistry	State Oceanographical Institute (GOIN), Kropotkinskij pereulok 6, Moscow.
Lednev, V. A., Prof.	Hydrography of the North Atlantic	
Andrijashev, A. P., Prof.	Fish of northern seas	Institute of Zoology, Academy of Sciences of the U.S.S.R. (ZIN), Birshevaya linija 1, Leningrad.
Svetovidov, A. N., Corr. Mem. Acad. Sci. U.S.S.R.	Clupeidae. Gadidae	
Preobrazhensky, Ju. V.	Hydrology of the Baltic	State Oceanographical Institute, Leningrad Department, Leningrad.
Soskin, I. M.	Water masses of the Baltic	
Ivlev, V. S., Prof.	Productivity of water	Institute of Freshwater Fisheries of the U.S.S.R. (VNIORKH), Smolnaya Ul. 3, Leningrad.
Rannak, L. A., Mrs.	Clupeidae of the northern Baltic	Laboratory of Commercial Ichthyology, Baltic Institute of Marine Fisheries and Oceanography, Apteegy 1/2, Tallinn.
Lishev, M. N.	Behaviour of fish	Laboratory of Ichthyology, Baltic Institute of Marine Fisheries and Oceanography, Bezdeligu 1, Riga.
Malikova, E. M., Mrs.	Salmon	
Nikolaev, I. I.	Plankton of the Baltic	
Gasjunas, I. I.	Hydrobiology of the Gulfs of the Baltic	Institute of Biology, Academy of Sciences of Lithuanian S.S.R., Vilnius.
Birjukov, N. P.	Fish of the Baltic	Baltic Institute of Marine Fisheries and Oceanography, Kaliningrad.
Fridland, J. G.	Clupeidae of the Baltic	
Kadilnikov, U. V.	Techniques of commercial fisheries	
Petelin, P. V.	Techniques of commercial fisheries	
Probatov, A. N.	Clupeidae of the Baltic	
Shebalin, O. D.	Fisheries oceanography	
Adrov, M. M.	Hydrology of the Norwegian Sea	Polar Institute of Marine Fisheries and Oceanography (PINRO), Murmansk.
Alekseev, A. P.	Thermics of the Distant Northern Seas	
Baranenkova, A. S., Mrs.	Gadoid fish	
Fedorov, S. S.	Clupeidae of the North Atlantic	
Judanov, I. G.	Clupeidae of the North Atlantic	
Lagunov, I. I.	Salmonids of the Barents Sea and the White Sea	
Maslov, N. A.	Fish of the Barents Sea	
Pavshtiks, E. A., Mrs.	Plankton of the northern North Atlantic	
Sedykh, K. A.	Thermics of the Barents Sea	
Starovojtov, P. A.	Techniques of commercial fisheries	
Travin, V. I.	Biology of *Sebastes marinus* (L.)	
Vinogradova, P. S., Mrs.	Bathymetry and floors of the Barents Sea and the Distant Northern Seas	
Kamshilov, M. M., Prof.	Benthos of the Barents Sea	Biological Station of the Academy of Sciences of the U.S.S.R., Dalnie Zelentsy, Murmansk.
Gemp, K. P., Mrs.	Algae of northern seas	Algal Laboratory, Institute of Marine Fisheries and Oceanography of the U.S.S.R., Arkhangelsk.
Palenichko, Z. G., Mrs.	Fishery investigations in the White Sea	White Sea Biological Station, Petrozavodsk.
Timonov, V. V.	Oceanology	State Meteorological Service, 12 Pavlik Morozov, Moscow, D-22.
Spain		
Génova, A., Amiral, Directeur Général	Océanographie	Instituto Español de Oceanografía, Alcalá 27, Madrid.
Navarro, F., Sous-Directeur	Clupéidés	
Aravio-Torre, J.	Chimie des algues	
Arévalo, A.	Chimie physique	

Name and Title	Special Subjects	Address
Spain (continued)		
Bardán de Bellón, E., Mme	Clupéidés	Instituto Español de Oceanografía, Alcalá 27, Madrid.
Blanco, J., Dr.	Maréographes	
Gaibar, C., Dr.	Océanographie	
García Pineda, M. D., Dr., Mlle	Biochimie	
Gonzales Sabariegos, M. L., Mlle	Facteurs océanographiques	
Hernández Pacheco, F., Prof.	Morphologie. Sédiments	
Jimeno, E., Prof.	Chimie physique	
Lozano Rey, L., Prof. agrégé	Ichtyologie	
Martin Retortillo, M., Mlle	Chimie physique	
Menéndez, N., Prof.	Océanographie physique	
Montequi, R., Prof.	Chimie appliquée	
Navarro, M. G., Mme	Ichtylogie	
Seco, E.	Courants marins	
Rodriguez, O., Dr.	Biologie marine	Dirección General de Pesca Marítima, Ruiz de Alarcón 1, Madrid.
Balén, F., Capitaine de Vaisseau, Directeur	Hydrographie	Instituto Hidrográfico de la Marina, Cádiz.
Navaz, J. M., Directeur	Ichtyologie. Mollusques	Palacio del Mar, Sociedad Oceanográfica de Guipúzcoa, San Sebastián.
Llarena, J. G., Prof.	Géologie. Sédiments	Palacio del Mar, Acuario, Sociedad Oceanográfica de Guipúzcoa, San Sebastián.
Cuesta, J., Directeur	Plancton. Cultures marines	Laboratorio del Instituto Español de Oceanografía, Lealtad 13, Santander.
Sánchez, M., Prof.	Biologie. Mollusques	
Rodriguez Heras, R., Directeur	Chimie appliquée	Laboratorio del Instituto Español de Oceanografía, Felipe Sanchez 20. Vigo.
Besada, J. R.	Chimie appliquée à l'industrie	
Cabañas, F., Dr.	Biologie. Mollusques et Crustacés	
Ezama, A.	Biologie	
Fernandez Riego, A., Prof.	Chimie appliquée. Sousproduit	
López Costa, R.	Chimie appliquée. Réfrigération	
Montequi, D., Mme	Chimie analytique. Réfrigération	
Rodriguez Molins, L.	Chimie appliquée	
García Cabrera, R.	Biologie marine	Laboratorio del Instituto Español de Oceanografía, Palacio del Mar, Santa Cruz de Tenerife.
Andreu, B., Directeur	Biologie marine	Instituto de Investigaciónes Pesqueras, General Aranda 66, Vigo.
Rodriguez Roda, J. Dr., Directeur	Biologie de la pêche	Instituto de Investigaciónes Pesqueras, Cádiz.
Sweden		
Hult, J., Dr., Director	Salmon and trout. Crustacea	Kungl. Fiskeristyrelsen, Postfack 2126, Göteborg 2.
Sahlin, S., Fil. lic., Head of Bureau	Eel. Statistics	
Hessle, Chr., Dr.	Eel. Herring	
Enequist, P., Dr.	Salmon and trout. Statistics	
Lindquist, A., fil. lic.	Plankton	
Alm, G., Dr.	Salmon and trout	Sötvattenslaboratoriet, Drottningholm.
Hannerz, L., Dr.	Bottom fauna. Radioactive wastes	
Höglund, H., Dr.	Herring. Plankton. Shellfish	Havsfiskelaboratoriet, Lysekil.
Otterlind, G., Fil. lic.	Cephalopods. Herring. Cod	
Sörensen, I., Fil. lic.	Whiting. Mackerel	
Svansson, A., Fil. mag.	Hydrography	Kungl. Fiskeristyrelsen, Postfack 1038, Göteborg 4.
Kullenberg, B., Prof., Dr.	Physical oceanography. Sediments	Oceanografiska Institutet, Postfack 1038, Göteborg 4.
Jerlov, N., Dr.	Physical oceanography. Submarine daylight	
Andersson, K. A., Dr.	Herring. Haddock. Fishery	Bragevägen 4, Djursholm 2.
Carlin, B., Dr.	Salmon and trout	Baldersvägen 14, Sundsvall.
Lindroth, A., Dr.	Salmon and trout	Box 1196, Sörberge.
Molander, A., Dr.	Flatfish. Sprat. Haddock. Ling	Lysekil.
Rosén, N., Dr.	Statistics. Salmon and trout	Aschebergsgatan 34, Göteborg.
Alander, H., Dr.	Hydrography. Herring. Cod	Carl Larssonsgatan 3 A, Göteborg S.

ENGLISH VERSION

Symposium on Salmon and Trout

Convener: Professor G. Nikolsky; Rapporteur: Mr. F. T. K. Pentelow

The papers submitted to the Symposium were arranged according to subjects, as follows:—

A. Tagging.

1. A. Lindroth: "Short report on internal tagging of salmon parr."
2. D. H. Mills: "Salmon smolt tagging experiments at Invergarry salmon hatchery."
3. N. P. Rudakov: "The use of radioactive calcium (Ca^{45}) for marking of young salmon fish."
4. W. M. Shearer: "Some notes on the efficiency of two types of tag used for tagging sea trout kelts in the River Dee, Aberdeenshire."
5. J. Dahl: "A review of the Danish types of tags for salmon and trout as shown by recaptures."
6. A. Swain: "Tags for salmon and trout and their relative effectiveness."

B. Liberation.

1. Knud Larsen: "The effect of the liberation of sea trout fry in the Gudenå area, as shown by the trout catch in the lower river and Randers Fjord."
2. N. W. Ewropeizewa: "The experimental analysis of the salmon's young (*Salmo salar* L.) in the stage of transition to the life mode in the sea."
3. Erik Montén: "The amplitude of the smolt production of the Swedish State Power Board."
4. N. I. Koshin and A. A. Protaso: "Freshwater species of salmon and their significance in the genesis of the Salmonidae and practical fish culture."
5. I. I. Lagunov and V. V. Azbelev: "On the efficiency of natural propagation in the Atlantic salmon (*Salmo salar* L.)."
6. V. S. Ivlev and G. G. Galkin: "Surviving and growth of Baltic salmon of different age in natural conditions."
7. M. I. Wladimirskaya: "Young salmon in the upper part of the Petchora River."

C. General Problems.

1. B. Carlin: "Salmon conservation in the Baltic."
2. A. Lindroth: "Co-operation in research and management of Baltic salmon."
3. G. V. Nikolsky and N. I. Koshin: "Some peculiarities of salmon biology which are important in their reproduction."
4. P. F. Elson: "Developing effective use of hatchery-reared Atlantic salmon (*Salmo salar* L.) in Canada."
5. M. N. Lishev: "Some peculiarities of the population dynamics of the salmon stock of the eastern Baltic."

These papers will be published in full, forming Vol. 148 of the series *Rapports et Procès-Verbaux.*

Report and Recommendations of the Consultative Committee

Chairman: Dr. A. E. J. Went

I. Proceedings

1. At the first session of the Committee the Chairman drew attention to the report on Committee Arrangements, submitted by the *ad hoc* Committee, consisting of Dr. Went, Mr. Rollefsen, and Dr. Korringa, and asked the members to give their opinions concerning the proposals set out in that report at the second meeting. The Chairman also asked members to sound the feeling of their committees regarding changing the date of future Council Meetings from the first week in October to the middle of May. At the second meeting of the Consultative Committee it was agreed to postpone a final decision on this question until the next Council Meeting.

2. Committee Arrangements.

At the second session it was decided that a solution of this problem could be reached by modification of the publications, and Recommendation 1 was adopted.

3. Report of Committees.

The committee reports were tabled including a report from the Editorial Committee. Various points concerning the *Journal du Conseil* were discussed and it was agreed to restrict the size of the Journal to 450 pages in order to conform to the amount allocated for printing. It was agreed to discontinue the "Current Bibliography" in the *Journal du Conseil*, as from Volume **25**, if FAO indicates that it intends to continue the "Current Bibliography for Fisheries Science" in future. This will enable approximately the same number of papers to be published as in the present volume (Vol. **24**). It was also agreed that where orders for reprints exceed 300 copies, a charge, in addition to the cost of printing, should be made at the discretion of the Secretary General.

Each Chairman commented on his Committee report and the recommendations were discussed. A recommendation for a Special Scientific Meeting in connexion with the IGY surveys, before the next Council Meeting, was adopted (Rec. 5). Recommendations involving expenditure were also specifically dealt with, and Recommendations 6 a and b, and 7 were strongly supported.

As no progress had been made in discussing the proposal for an International Convention for the Baltic, Recommendation 2 from the Baltic-Belt Seas Committee (on the same lines as that of last year) was adopted (Rec. 3).

The Committee accepted the proposal of the Herring Committee that a working group should compile a report on the herring tagging experiments made on the Bløden Ground. The Committee also accepted the recommendation from the Near Northern Seas Committee that a working group be established to initiate a scheme for tagging of soles in the North Sea on an international basis.

Professor Nikolsky gave an account of the Symposium on Salmon and Sea Trout, held before the Council Meeting and it was decided to recommend that the papers contributed to the Symposium be published after being edited by the rapporteur (Rec. 2).

The Committee agreed with the proposal put forward that ICES should co-sponsor a Symposium on Redfish after the Council Meeting in 1959 (Rec. 8).

4. Press Release.

The importance of a suitable press release, both before and after the Council Meetings, was stressed by many members, and Recommendation 9 was agreed.

Dr. A. E. J. Went was re-elected Chairman.

II. Recommandations

1. Arrangement of Committees

(a) It was agreed that the Administrative Report of the various committees should continue as heretofore with suitable cross references and that the Secretary General should be given authority to edit the reports of each committee.

(b) It was also agreed that the *Annales Biologiques* should be restricted to work done under the Area Committees, the exception being work done on Shellfish, Salmon and Trout, Herring, and Gadoid Fish.

2. Publications

It was agreed that the papers submitted to the Symposium on Salmon and Sea Trout be edited by the rapporteur and published in full by the Council in the series *Rapports et Procès-Verbaux*. The cost of printing was estimated at about 8,000 kroner.

3. Action for the Bureau

Having discussed the present state of the stocks of fish in the Baltic, the Baltic-Belt Seas Committee realizes the urgent need for international protective measures. Accordingly, it is recommended that a meeting of Baltic member countries should be convened at at convenient place to discuss a convention for the protection of the stocks of fish in the Baltic.

4. International Herring and Sole Tagging Programmes

(a) The Committee considers that the International Herring Tagging Experiments conducted in 1957 and 1958 have proved of great value and it recommends that this work should be continued in future as requirements demand. It was decided that Dr. Bertelsen and Mr. Andersen (Copenhagen) and Mr. Gulland (Lowestoft) should be asked to work up the material collected during the tagging experiment in 1958.

(b) The Committee also considers that a working group, consisting of one member from each country participating in the sole fishery of the North Sea, should be established to initiate a scheme for tagging soles on an international basis.

5. Special Meeting

It was agreed that a special meeting should be held on 1st, 2nd, and 3rd October 1959 prior to the next Council Meeting to review the hydrographical and biological results of the IGY surveys conducted in 1958.

Dr. J. Tait was asked to act as convener. It was agreed that Dr. D. H. Cushing (Lowestoft) should be asked to undertake the task of rapporteur of the biological section and that Mr. A. J. Lee (Lowestoft) should act as rapporteur in connexion with the hydrographical data.

6. Records of Hydrographical Data

(a) It was agreed that in view of the increasing amount of data to be handled by the Service Hydrographique, mechanization of the Index in that Service should be undertaken at an estimated cost of kroner 15,650 for 1958—1959.

(b) It was also agreed that further investigations into the preparation of a suitable conductivity standard should be made by co-operation between the Standard Sea Water Service of IAPO and the Sub-Committee for considering Standard Methods for Salinity Determination. For this purpose it will be necessary to provide a sum of 1,000 kroner.

7. Improvement of Statistics

In view of the increasing use of the *Bulletin Statistique* in scientific evaluation of exploited fish stocks by the Permanent Commission and the Liaison Committee the Statistical Committee recommends that the Secretary General should visit those countries for which delays have been experienced in obtaining satisfactory statistics with a view to accelerating and improving the presentation of statistics by the Council. The cost will not exceed 1,500 kroner.

8. International Co-operation

It was decided to recommend to the Council that the invitation of ICNAF for ICES to co-sponsor the Redfish Symposium of the 1959 Meeting of the Council should be accepted.

9. Press Release

It was agreed that suitable press releases regarding the work and meetings of the Council should be made regularly.

Reports and Programmes of Committees

Distant Northern Seas Committee

Chairman: Mr. Jón Jónsson

I. Proceedings

The Chairman welcomed members and guests and expressed his deep sorrow at the death of the President of ICES, Dr. Å. V. Tåning. The Chairman paid a tribute to Dr. Tåning's activity in this Committee and in the former North-Western Area Committee.

All members of the Committee were present except the representatives for Finland, Ireland, and Poland. Portugal was admitted to the Committee, represented by Dr. Ruivo. Various changes in the representation of the Committee were brought to notice.

The Administrative Report was adopted without comments.

Professor Bückmann opened a discussion on the biological investigations made in connexion with the International Geophysical Year and after some discussion Recommendation 1 was carried.

The Redfish Symposium to be held jointly by ICES and ICNAF in 1959 was discussed to some length. Dr. Poulsen outlined the proposals made at the last ICNAF meeting. The Committee decided to add a new topic to the Symposium: "The redfish and the hydrographical conditions". Recommendation 2 was agreed.

Mr. Jón Jónsson was re-elected Chairman for the coming year.

II. Communications

A. Kotthaus: "Composition of the German redfish landings at Bremerhaven in respect of the different *Sebastes* types (August to December 1957)."

U. Stefánsson: "Recent years' variation in the hydrographical and chemical conditions of North Icelandic waters."

A. Sigurðsson: "A preliminary report on Icelandic plaice investigations."
J. Magnússon: "Preliminary report on a redfish cruise to the Labrador Sea."

III. Programme of Work

Germany presented the programme of "Anton Dohrn" for 1959 but it was not yet possible for other countries to present programmes of their cruises in the area. These programmes will, however, be circulated by the Central Office in the beginning of 1959.

IV. Recommandations

1. The Distant Northern Seas Committee considers that an early opportunity should be taken to review the hydrographical and biological results of the IGY surveys conducted in 1958 and it recommends that, subject to the decisions of the Hydrographical Committee on this matter, a special scientific meeting for this purpose should be held at the 1959 Annual Meeting of the Council.

2. The Committee welcomes the decision of ICNAF to hold a Redfish Symposium in Europe at the time of the 1959 Meeting of the Council and it strongly recommends that ICES should accept the invitation by ICNAF to co-sponsor the meeting.

Near Northern Seas Committee

Chairman: Dr. P. Korringa

I. Proceedings

The Chairman opened the meeting, welcoming the members and guests. The list of members was checked and brought up to date. The Administrative Report for 1957 was approved. The Chairman informed the members that proofs of the papers for the *Annales Biologiques* will henceforth be sent to the authors for correction, as the old system to pass them around during the meetings was not satisfactory. The authors should return the corrected proofs to the Secretariat at their earliest convenience. The Chairman invited the members to present their manuscripts for the *Annales Biologiques* in as good a shape as possible, avoiding undue length, especially where reference to earlier papers is possible, and arranging for suitable editing if the language used is not the author's mother tongue. The members were informed that rearrangements of committees, studied by an *ad hoc* committee, was considered unnecessary, but that the objections made earlier could be met by proper indexing of the *Annales Biologiques*, both as to author and subject.

The recommendation on whiting research, adopted in 1957, was overlapped by a detailed questionary circulated to member countries by the "Problem Committee" set up by the Permanent Commission on Overfishing in October last. Extensive information on whiting has been brought together in this way, and has since been worked up by the co-opted members of the Liaison Committee. Therefore there is no need for the Near Northern Seas Committee to report on this matter to the Liaison Committee.

The request of the Hydrographical Committee to comment on their long-term programme from the biological angle will be dealt with by a circular letter on this matter which the Chairman proposes to send to member countries. Members can then consider this important matter very carefully. A digest of the replies will be sent to the Secretariat by the Chairman.

At the request of the Chairman of the Consultative Committee the question whether the month of October was the most appropriate time of the year for the Council Meetings was discussed. Many members favoured the month of May, which would give sufficient time to work up data collected in the previous season, and would not interfere with, for instance, herring research at sea. May would also allow more time for preparation of papers and the data presented would be more complete.

Dr. P. Korringa was re-elected Chairman.

II. Communications

The following papers were presented and discussed by the Committee:—

E. Leloup: "Le merlan au large de la côte belge."
R. J. H. Beverton, A. R. Margetts, and J. A. Gulland: "Progress report on English whiting tagging in the Irish Sea."
R. Gamble: "Some recent Scottish whiting investigations."
E. Bertelsen and K. Popp-Madsen: "Some observations on the biology and fishery of the sand-eel (*Ammodytes*)."
A. R. Margetts: "Some outstanding problems of the population biology of the North Sea sole." (With a postscript by R. J. H. Beverton and L. K. Boerema.)

III. Programme of Work

The provisional programme for 1959 for England and Wales was presented and discussed. The fact that programmes for other countries were not yet available was due to the date of the meeting, long before the 1959 programme had to be started, and whilst many sections of the 1958 programme are still in full swing.

The Chairman urged the members to send him their programmes for 1959, even if only provisional, so they may be circulated among member countries, since this is an important matter in furthering international co-operation and co-ordination of work.

IV. Recommendations

The discussion of MARGETTS' paper on the North Sea sole, with commentary by BEVERTON and BOEREMA, ultimately led to the adoption of the following recommendation:—

That a working group, consisting of one member from each country participating in the sole fishery of the North Sea should be established to initiate a scheme for tagging of soles on an international basis.

Baltic-Belt Seas Committee

Chairman: Dr. AA. J. C. JENSEN

I. Proceedings

The list of members was checked. The Administrative Report for 1957 was submitted to the contributors for corrections.

The suggested arrangements of committees and the *Annales Biologiques* were discussed and it was agreed that the reports in the *Annales Biologiques* should best follow the proposals of the *ad hoc* Committee.

Dr. AA. J. C. JENSEN was re-elected Chairman.

II. Communications

K. DEMEL and Z. MULICKI: "Quantitative studies on the epibenthos in the southern Baltic."

Z. MULICKI: "The polychaete *Harmothoë sarsi* Kinberg and its environment in the Baltic."

P. CISZEWSKI and K. DEMEL: "Experiments on estimating the stock of *Furcellaria fastigiata* in the Puck Bay by means of diving methods (Gulf of Gdańsk)."

A. GŁOWIŃSKA: "Hydrographical conditions in the southern Baltic, January 1958."

T. F. DEMENTJEVA: "Prospects of fishing in 1959 in the eastern part of the Baltic."

SVEN G. SEGERSTRÅLE: "Observations on the stock composition of *Macoma baltica* in the coastal waters of southern Finland during the period 1926—1958."

AA. J. C. JENSEN: "The influence of predatory animals upon the stocks of fish and the yield of the fisheries."

III. Programme of Work

The long-term programme was discussed and in connexion with this, the work in the coming year was arranged as far as possible to cover the most necessary future investigations, especially the collection of data for fishery dynamic studies.

On most other points the work of previous years should be continued. More tagging of herring should be carried out.

It was unanimously agreed that more time should be given to committee meetings.

IV. Recommendations

1. It was recommended that regular hydrographic observations should be continued by Denmark in the Bornholm Deep, near Christiansø.

2. Having discussed the present state of the stocks of fish in the Baltic, the Baltic-Belt Seas Committee realizes the urgent need for international protective measures. Accordingly, it is recommended that, as also recommended in 1957, a meeting of the Baltic member countries should be convened at a convenient place to discuss a convention for the protection of the stocks of fish in the Baltic.

Atlantic Committee

Chairman: Dr. J. Furnestin

I. Proceedings

The list of members was checked. The Administrative Report was adopted. The question was discussed whether the papers submitted to the *Annales Biologiques* should be included in the geographical or in the special committees. The members of the Committee was of the opinion that October, as heretofore, was preferable to May as a meeting date for the General Assembly of the Council.

The Chairman informed the members that he had received a letter from Prof. Bückmann suggesting a special meeting dealing with the biological results obtained during the International Geophysical Year in which numerous research ships had taken part. Interesting results had been achieved in the various geographical sections by means of new techniques. This special meeting should be held in connexion with the next Council Meeting; this proposal was adopted by the Atlantic Committee.

The long-term programme of work at sea, established by the Hydrographical Committee for the different areas, was adopted by the members of the Committee.

Dr. E. Leloup was elected Chairman.

II. Communications

L. Berthois et R. Brenot: "La morphologie sous-marine du talus du plateau continental entre le sud de l'Irlande et le Cap Ortegal (Espagne). Mise au point des résultats obtenus."

L. Vincent-Cuaz: "Contributions à l'étude biométrique de la langouste verte mauritanienne *Palinurus regius*."

L. Vincent-Cuaz: "Contribution à l'étude biométrique de la langouste rose *Palinurus mauritanicus*."

José M. Navaz: "Poissons rares sur la côte Basque d'Espagne (1946—1957)."

M.-L. Furnestin: "Les méduses de la côte Atlantique du Maroc."

J. Furnestin, J. Dardignac, Cl. Maurin, A. Vincent, R. Coupé et H. Boutière: "Aperçu sur l'écologie des poissons du Maroc Atlantique."

III. Programme of Work

It was agreed that the Atlantic Committee should treat general subjects which did not intrude upon the work of the special committees, such as faunistic questions concerning vertebrates and invertebrates in relation to the hydrographic conditions; the colonization of the northern waters within the Atlantic area by southern species, viz., lusitanian and subtropical; sub-marine morphology and geology should also be studied. Four of the Communications presented at the meeting were related to questions of this kind.

The representatives for Portugal announced that a paper on the sexual maturity of *Trachurus trachurus* was in preparation.

IV. Recommandation

The Atlantic Committee recommended that a Special Meeting on the biological results obtained by the research ships of the International Geophysical Year should be held in connexion with the next Council Meeting.

Comparative Fishing Committee

Chairman: Dr. C. E. Lucas

I. Proceedings

In opening the meeting the Chairman welcomed all the committee members and the numerous visitors who were present. All countries were represented, but various changes in official nominal representation were brought to notice.

Subject to minor corrections, the Committee approved the Administrative Report for 1957.

Following discussion of the Agenda and list of contributions, the Committee decided to discuss first the more general business concerning reports and programmes, then the various contributions, and then more specifically the Committee's programme for 1958—59.

Before opening discussion on the results obtained during the coordinated programme for 1957—58, the Chairman reminded the Committee of the tasks laid on them by the Liaison Committee, and informed them that these had recently been increased by one specific problem met during the recent work of the

Permanent Commission. On behalf of the Chairman of the Liaison Committee members were accordingly asked "to study the effect of different mesh sizes, and of taggings and materials of trawls, on the chafing of fish in the trawl catches" and to report as soon as possible to the Chairman of this Committee on any information which is, or becomes available.

The details of the coordinated programme were then considered in the light of results obtained so far. As a whole these represented a very considerable body of data, particularly on selectivities with respect to various kinds of fish, types of twine, and rigs of gear. Among the various needs set out in the table below, information (sometimes for several experiments) is now available for each of those indicated. In addition, there is information concerning selection in light trawls, various combinations of materials and rigs in trawl constructions, and in relation to rate of flow, etc.

Selectivity data

+ denotes data required, ⊕ data available

	Cod 110 mm	Cod 80 mm	Hake 80 mm	Plaice 110 mm	Plaice 80 mm
Trawls					
Manila & Sisal	⊕	⊕	+	+	
Cotton	+	⊕	+	+	+
Hemp	+	+	+		⊕
Nylon & Perlon	⊕	+	+	+	+
Other synthetics	⊕	+	+	+	⊕
		70 mm	70 mm	100 mm	70 mm
Seines					
Cotton		+	+	+	⊕
Nylon & Perlon		+	+	+	⊕
Other synthetics		+	+	+	+

	Haddock 110 mm	Haddock 80 mm	Whiting 80 mm	Sole 80 mm
Trawls				
Manila & Sisal	⊕	⊕	⊕	+
Cotton	+	+	⊕	+
Hemp		+	⊕	+
Nylon & Perlon	⊕	⊕	⊕	+
Other synthetics	+	⊕	⊕	+
		70 mm	70 mm	70 mm
Seines				
Cotton		+	+	+
Nylon & Perlon		+	+	+
Other synthetics		+	+	+

This table shows, however, that there is no new information on selection of cod and sole in the 80 mm area and plaice in the 110 mm area, while there is all too little information regarding seine nets, and of cotton and hemp trawls. Work is, however, still proceeding in some countries on the 1958 programme.

It was agreed that this first attempt at coordination had been valuable and it was unanimously decided that plans should be made for the programme to be continued and developed in 1959. Special attention was drawn to the value for certain kinds of investigations of collaborative work between vessels of several countries, such as had recently been done by Denmark, Germany, Holland, and Scotland. After discussion, Recommendations 1, 2, and 3 below were agreed unanimously.

Brief abstracts of the eighteen contributions were then given in the order listed. They were discussed in appropriate groupings, concerning (a) methods of analysis, (b) effects of cod-end covers, (c) mesh selection factors, (d) variation of these factors in relation to the conditions of particular experiments, (e) mesh measurement methods, (f) other kinds of selection processes, (g) classification of fishing gear, (h) theory of fishing, and (j) changes in length of fish after death. Valuable discussions were held on each of these and interim reports on work in progress were given by several workers, including graphs and tables concerning recent selection data obtained by Swedish workers. Subsequent discussion led to the adoption of Recommendations 4, 5, and 6 below.

At the conclusion of the meeting Dr. C. E. Lucas was re-elected Chairman.

II. Contributions

R. Jones: "Some observations on the analysis of selection data."

R. Jones: "Some observations on cover effects."

R. J. H. Beverton: "The influence of design of cover net on cod-end selectivity."

L. K. Boerema: "Mesh selection experiments. (a) Comparison of mesh selection of cod-ends of hemp and polyethylene (nymplex). (b) Effect of type of gear on mesh selection data."

W. Cieglewicz and W. Strzyzewski: "The selectivity of different parts of cod-ends."

G. Sætersdal: "Mesh selection data of Arctic cod and haddock."

Aa. J. C. Jensen: "Investigations on the selection of plaice, dab, and cod by the cod-end meshes of Danish seine and light trawls."

G. Sætersdal: "Selectivity experiments with topside chafers."

A. v. Brandt, J. Pope, and M. Roessingh: "International mesh selection experiments 1958."

E. Bertelsen, R. Jones, and M. Roessingh: "International comparative fishing experiments 1958."

A. v. Brandt: "Escapement of haddock through a wire mesh cod-end."

J. Messtorff: "Length-girth measurements of cod and their relationship to mesh selection."

R. J. H. Beverton and B. C. Bedford: "On the measurement of the bias and precision of mesh gauges."

L. K. Boerema: "Note on the need for standardisasation of mesh measuring methods."

G. Sætersdal: "Selectivity processes in the 'skrei' fishery."

A. Treschev: "Abstract of the report 'Classification of fishing gear'."
N. N. Andreev: "The theory of fishing with purse seine."
Aa. J. C. Jensen: "Change of the length of fish after death."

III. Recommendations

1. That, in view of the valuable result obtained so far from the "coordinated" programme planned for 1958, that programme be adjusted and extended as required in the light of those results as a guide to operations in 1959.
2. Recognizing that certain kinds of information can most usefully, or only, be obtained from international fishing experiments, such as those made in 1958, the value of such collaborative research vessel programmes be urged upon the member countries.
3. That a sub-committee consisting of the Chairman, with the assistance of Professor von Brandt, Mr. Beverton, and Mr. Parrish be appointed to revise the 1958 coordinated programme and communicate the proposals as soon as possible to the representatives of the member countries. In this they should distinguish particularly those items which can most usefully be undertaken by research vessels working in collaboration.
4. Information obtained to date suggests that the type of top-side chafer prescribed by ICNAF influences selection less than the usual tightly-fitting commercial chafer. Work should continue, however, so as to determine the most suitable type of chafer.
5. That, while copies of all the contributions should be forwarded to the Liaison Committee, a sub-committee composed of Professor von Brandt, Mr. Parrish, and Mr. Sætersdal be requested to make such report on them as may be possible in the time available before the Liaison Committee meets.
6. That information be collected on the amount of shrinkage undergone by commercial fish after death, paying careful attention to changes before, during, and for some considerable period after *rigor mortis*, with special reference to the changes undergone in the first hour after death, and the general conditions under which the fish are caught.

Gadoid Fish Committee

Chairman: Mr. G. Rollefsen

I. Proceedings

The Chairman opened the meeting and remembered the late President Åge Vedel Tåning. The list of members was checked and accepted with minor alterations. The Administrative Report for 1957 was accepted.

Mr. Gunnar Rollefsen was re-elected Chairman.

II. Communications

St. Rutkowicz: "The course of cod spawning in the southern Baltic in the spring of 1958."
E. Stanek: "Fluctuations of the Bornholm Basin cod stock in 1955—1958."
M. Ruivo and G. Quartin: "Observations on the cod (*Gadus callarias* L.) in Greenland 1957."
M. Ruivo et G. Quartin: "Résultats préliminaires des observations faites sur la morue (*G. callarias* L.) au Groenland (1958)."
A. Hylen: "Marking experiments on the Arctic cod."
N. A. Maslov: "Conditions of the stocks and abundance of cod in the southern Barents Sea."
G. Sætersdal: "Note on estimation of brood strength of Arctic cod and haddock."
G. Sætersdal and J. H. R. Beverton: "Progress Report on joint investigations on Arctic cod."

III. Considerations

The discussions were divided into three parts: (1) the stock of cod in the southern Baltic; (2) the stock of cod in West Greenland waters, and (3) the stock of cod in Arctic waters (Barents Sea—Norwegian Coast). A remarkable change in distribution, growth-rate, and rate of sexual maturity, has been observed during the past years, both for the Baltic and West Greenland stocks of cod. The decline in growth-rate has considerably influenced the weight of the total catch.

The results of the Soviet, English, and Norwegian investigations on the Arctic cod were in conformity and pointed to radical changes in distribution and availability of the Arctic cod during the most recent years, as compared with previous years.

The density of the stocks seems to be substantially reduced. The state of the Arctic cod stock was already

brought to the attention of the Permanent Commission at its last meeting and the Liaison Committee referred the matter to the Gadoid Fish Committee. The Chairman of this Committee therefore asked Mr. Beverton, Mr. Sætersdal, and Mr. Boerema to prepare a list of the data already available and draw up a programme for future work.—A Progress Report to this effect was presented by Mr. Beverton and Mr. Sætersdal. After some discussion it was agreed to recommend further steps to be taken as soon as possible and that scientists from the countries concerned should meet in about six months to see if more data could be produced and to discuss the programme outlined in the Progress Report.

The contribution on tagging also gave rise to discussion. It was agreed that the method of capture of cod for tagging was a factor of great importance for the chance of survival and that the tagging technique could be improved. It was hoped that a future special meeting on tagging would take up the different aspects of methods of capture of fish for tagging experiments and the tagging techniques proper.

IV. Programme of Work

The co-operation at sea between member countries was discussed. A number of countries were at present not in a position to present the complete programme for 1959 and it was agreed to discuss the possibilities of co-operation between the institutes involved when the cruise programmes were announced.

V. Recommendation

In consequence of the acceptance by the Committee of the "Progress Report on Joint Investigations on Arctic Cod", submitted by Beverton and Sætersdal, it was agreed that the Chairman should call a meeting of Soviet, English, and Norwegian scientists to take place in Bergen in April 1959 in order to carry out the programme of work outlined in the Progress Report.

It is thought that such a meeting would last for a week and the expenses involved are expected to be borne by the countries concerned.

Herring Committee

Chairman: Mr. Olav Aasen

I. Proceedings

The list of members was checked and certain amendments were made. The Administrative Report was presented and adopted. During the proceedings the members outlined their programmes of work for the coming year.

The Editor's note concerning the *Annales Biologiques* was made known to members. The feeling expressed in the last paragraph of the Committee Arrangements dated 1958, was considered but the Committee were strongly of the opinion that it should not be adopted for the work on herring.

Dr. Höglund reported on the international Bløden tagging experiment in 1958, and a short film taken during the experiment was shown. It was agreed that the working up of the scale material taken during the experiment should be shared between the following countries:— England, Sweden, Germany, Netherlands, USSR, Denmark, and Scotland.

The English proposition concerning the merits or otherwise of closing fishing grounds in the Southern Bight of the North Sea was considered during the discussion of the contributions relating to this subject.

The suggested change in time of future Council Meetings was considered and the Committee felt that time was insufficient reason to warrant a change.

Mr. B. B. Parrish was elected Chairman.

II. Communications

The following contributions were presented and discussed:—

G. Hempel: "On the growth of otoliths in young herring of the German Bight."

A. C. Burd: "*Calanus* and the herring."

B. B. Parrish and D. P. Sharman: "Otolith types amongst summer/autumn spawning herring in the northern North Sea."

I. G. Baxter: "Fecundities of winter/spring and summer/autumn herring spawners."

R. E. Craig: "Influence of temperature and wind on the herring fisheries of the north-western North Sea."

B. B. Parrish, A. Saville, R. E. Craig, I. G. Baxter, F. G. T. Holliday, and R. Priestley: "Observations on herring spawning and larval distribution in the Clyde estuary in 1958."

J. Popiel: "The growth-rate of the southern Baltic herring."

J. Popiel: "Preliminary results of the gill-raker counts in spring spawners of the Gulf of Gdańsk."

M. N. Krivobok: "The role of fat in the process of maturation of sexual products and spawning migrations of Salaka (Baltic herring)."

D. H. Cushing: "The conservation of the herring of the southern North Sea."

D. H. Cushing: "Recruitment of the North Sea herring stock."
A. C. Burd: "Recruitment and the North Shields fishery."
N. P. Biryukov: "On the distribution of herring in the North Sea."
L. N. Lisivnenko: "Distribution and behaviour of Salaka (Baltic herring) larvae and fry in the Gulf of Riga."
J. Ancellin et C. Nédélec: "Résultats préliminaires de la campagne de marquages de harengs dans le sud de la Mer du Nord et en Manche orientale, 'Président-Théodore-Tissier', novembre 1957."
J. J. Zijlstra: "The herring trawl catches in the Netherlands in the period 1947—1957."
J. J. Zijlstra: "Some data about the southern North Sea herring stock."
Ju. Ju. Marty: "Peculiarities of herring catches in 1958 in the Norwegian Sea."
O. Dragesund: "Remarks on the recovery of tags from the Norwegian herring fishery off North and East Iceland in 1958."

III. Recommendation

The Committee considers that the International Herring Tagging Experiments conducted in 1957 and 1958 have proved of great value and it recommends that this work should be continued in the future as requirements demand. It was decided that Dr. Bertelsen and Mr. Andersen (Copenhagen) and Mr. Gulland (Lowestoft) should be asked to work up the material collected during the tagging experiment in 1958.

Sardine Committee

Chairman: Dr. J. Cuesta

I. Proceedings

All the member countries of the Committee were represented, except Italy and USSR.

The list of members was checked. The Administrative Report was adopted and the Chairman drew attention to a note submitted by the Editorial Committee concerning future proof prints of the *Annales Biologiques*.

The members were agreed that contributions to the *Annales Biologiques* should be included in the Atlantic section.

Dr. J. Cuesta was re-elected Chairman.

II. Communications

J. Elwertowski: "Preliminary investigations on the dynamics of the sprat in the southern Baltic."
W. Mańkowski: "Characteristics of the sprat spawning in recent years."
V. A. Borodatov: "Data on the biology of *Sardinella aurita* in the Cape Verde area."
F. Cabáñas, M. Oliver et L. Molins: "Le frai de la sardine au Golfe de Cadix."
J. Cuesta: "Observations sur la biologie de la sardine à Santander 1957—1958."

III. Programme of Work

The same programme as in the preceding year would be continued by Belgium, France, Portugal, and Spain. Germany intended to study the quantity and distribution of eggs and fry of the sardine and other clupeoids. Norway would continue the study of recruitment and races of sprat in the Skagerak by means of the chromatographic method. The target for the Polish work was population studies of sprat in relation to hydrographic conditions, together with biochemical investigations on that species.

Scombriform Fish Committee

Chairman: Dr. H. Vilela

I. Proceedings

The list of members was corrected. The Administrative Report was presented and adopted.

The majority of the members were in favour of publishing the contribution to the *Annales Biologiques* under the subject committees. The members agreed to maintain the month of October as a meeting date for the Council.

Dr. H. Vilela was re-elected Chairman.

II. Communications

The following communications were presented and discussed:—

H. Vilela et J. Santos Pinto: "Sur les thons qu'on pêche au Portugal."

J. Hamre: "About the age composition of Norwegian tuna catches in the years 1954—58."

P. F. Meyer-Waarden: "Deutsche Untersuchungen über den Thunbestand in der Nordsee."

III. Programme of Work

Belgium: The same programme as in the previous year.

France: Study of the tuna in the Bay of Biscay. Investigations on *Katsuwonus pelamis*.

Germany: Investigations of the localities of capture, the size, weight, and sexual maturity of tuna in the North Sea; fecundity and distribution of mackerel eggs in the North Sea.

Netherlands: Study of the means by which to determine the age of the mackerel.

Norway: Study of the biology and fishery of tuna and tagging of tuna and mackerel.

Portugal: Study of ecology and fishery of tuna and investigations on *Neothunnus* and *Parathunnus* in the region of the islands of Cape Verde.

IV. Recommendation

The suggestion by Mr. O. Aasen, recommending tagging to be carried out on tuna, was unanimously approved.

Salmon and Trout Committee

Chairman: Prof. G. Nikolsky

I. Proceedings

The Chairman welcomed the members and guests. The list of members was checked and amended where necessary. It was decided to send a telegram to Dr. Kändler expressing the hope of a speedy recovery from illness.

The Administrative Report for 1957 was discussed and adopted.

The members of the Committee outlined their programme of work for 1958/59.

Further work in connexion with the recommendation concerning fish passes from the 1957 session was discussed and Recommendation 1 was adopted.

The recommendations of the Salmon Symposium were discussed and adopted.

A working group was established for the consideration of the problems concerning the salmon and sea trout in the Baltic. In this group the following members from the Baltic countries were included: Dr. Carlin (Chairman) and Dr. Lindroth (Sweden); Dr. Lishev and Prof. Koshin (USSR); Prof. Halme (Finland); Mr. K. Larsen and Mr. J. Knudsen (Denmark); Prof. Chrzan and Prof. Zarnecki (Poland); Prof. Kändler and Dr. Thurow (Germany).

Professor G. Nikolsky was re-elected Chairman.

II. Communications

G. Alm: "Notes regarding the salmon fishery in the Baltic in the year 1957."

F. Chrzan: "Estimating the length and weight increases of salmon and sea trout caught by the Polish fishermen."

F. Chrzan: "Salmon and sea trout with spawning marks in Polish catches."

R. Kändler: "The German salmon fishery in the south-eastern Baltic in the seasons 1956—57 and 1957—58."

J. Nielsen: "Some notes on the distribution and biology of salmon in Greenland."

W. M. Shearer: "Further notes on sea trout transportation experiments, river Dee, Aberdeenshire."

E. Twomey and A. Hewetson: "Movements of salmon around Ireland — from Ardmore, County Waterford."

St. Zarnecki: "Specific growth of Atlantic salmon originating in the Vistula. Analyses of the scales collected in 1950 and 1951."

St. Zarnecki: "The factors influencing the early forming of 'winter bands' on the scales of Atlantic salmon and sea trout."

M. N. Lishev: "Difference in the structure of scales of Baltic salmon of various river populations."

III. Recommendations

1. *Recommendations on Fish Passes.*
   (a) It is recommended that the collection of information on fish passes should be continued and that a bibliography of papers on fish passes, published since 1930 be prepared.
   (b) It is recommended that the studies on successful fish passes in relation to ecological conditions should also be pursued by participating countries.
2. *Recommendations from the Symposium on Salmon and Sea Trout.*
   (a) It is recommended that the papers to the Symposium be edited by the rapporteur and published in full by the Council.
   (b) That member countries pay special attention to the effects of predation on stocks of salmon and sea trout and that fishery workers should seek the co-operation of other scientists (e. g., ornithologists) and of others (e. g., hunters, anglers, and other sportsmen) who may be able to collect information relevant to the subject; and further that special investigations should be made into techniques of tagging suitable for the assessment of the intensity of predation.
   (c) Member countries should in the first instance discuss this by correspondence with a view to organizing some tests in 1959.
   (d) That a bibliography of tagging and marking be prepared to include references to sources of unpublished data as well as to published papers and that each country be asked to give a short introductory commentary on the bibliography supplied by it.
   (e) That all member countries should carry out experiments to determine the comparative value of various types of tags and of methods of tagging, and that in particular, as part of this programme, teams from different countries should participate in joint tagging programmes as a test of different techniques.
   (f) That as all aspects of the biology of salmon and sea trout are in need of further investigation all member countries are urged to undertake studies on production, mortality, and fishing effort with a view to the assessment of the population dynamics of the stocks of these species.
   (g) That the Salmon and Trout Committee should establish a working group to consider the problems of salmon and sea trout in the Baltic.
   (h) That the working party on salmon in the Baltic meet, if possible, in Sweden in March 1959 to further their consultations.
   (i) The Salmon and Trout Committee wish to report that they have benefited very greatly from the presence among them of the Canadian observer and wish to express their appreciation: they trust that similar co-operation will be possible at future meetings of the Committee.

Shellfish Committee

Chairman: Dr. H. A. Cole

I. Proceedings

The Chairman welcomed the members. The representation of the member countries on the Committee was unchanged.

The minutes of the 1957 meeting were considered and matters arising therefrom were discussed. Questions of special importance are referred to below. Certain recommendations were approved and are recorded below.

The Chairman reminded members of the importance of early submission of research programmes for circulation so that research could be coordinated.

At the request of the Chairman of the Consultative Committee consideration was given to the desirability of holding the annual meeting of ICES in May instead of September/October. Although the members were not of one mind it was thought that a return to a May meeting would enable papers and reports to be fully prepared during the winter for duplication and circulation prior to the meeting. This was now difficult because of the great pressure of summer work which continued into September.

Dr. H. A. Cole was re-elected Chairman for the ensuing year.

II. Biological Considerations

1. *Sanitary Control — Standardization of Procedures.*

A further report was presented by the Chairmen on a comparative study of the French and British methods for the bacteriological testing of shellfish, undertaken by Dr. P. C. Wood. It was agreed that the work should be continued and reports were requested from France, England and Wales, and the Netherlands for consideration at the 1959 meeting.

2. *International Research on Lobster Stocks off the South-West of Britain.*

Progress reports were presented by France, Ireland, and England and Wales. The necessity for continuing and extending these studies was agreed.

3. *Nephrops.*

Following the presentation of a paper by Dr. E. Leloup, it was noted that the fishery for *Nephrops* is growing in importance in many member countries. Concern was felt regarding the pressure on the stocks and the desirability of applying international conservation measures was discussed. It was agreed that further studies were urgently needed and the recommendation recorded below was approved.

4. *Causes of Losses among Stored Lobsters.*

Dr. P. Korringa reported on further studies of the disease caused by *Gaffkya* in lobsters in storage ponds and outlined methods of diagnosis and control. The importance of a wider knowledge of the incidence of this disease was agreed and the recommendation recorded below was approved.

III. Communications

P. Korringa: "The Netherlands shellfish industry and the Delta plan."
H. Vilela et M. M. Correia Monteiro: "L'*Ostrea edulis* L. au Portugal."
R. H. Baird: "A preliminary account of a new half square metre bottom sampler."
T. Th. Roskam: "Short note on gaffkaemia in lobsters and ways to prevent it."
F. A. Gibson: "Progress Report on lobster research of Ireland for Shellfish Committee."
B. T. Hepper: "England and Wales. Lobster research 1958. Preliminary report."
P. F. Meyer-Waarden: "Die Frage der Abhängigkeit der Garnelenfangerträge von der Wassertemperatur."
E. Leloup: "A propos de Langoustines."
N. Reynolds: "Further experiments on mussel purification."
P. C. Wood: "Report of investigations related to the methods and standards for bacteriological examination of shellfish."
D. A. Hancock and A. E. Urquhart: "Methods for marking whelks (*Buccinum undatum* L.)."
H. Vilela et M. M. Correia Monteiro: "Présence de copépodes chez *Mytilus edulis* L."
L. Faure: "Observations effectuées sur des homards pêchés au large de la côte sud de Grande Bretagne."

IV. Recommandations

1. That the comparative examination of methods of bacteriological testing of shellfish and standards of sanitary control be continued.
2. That co-operative studies of lobster stocks off the south-west of Britain be continued.
3. That in view of the concern regarding the possibility of overfishing of stocks of *Nephrops*, further studies of commercial stocks should be made in all countries in which this fishery is important. It is recommended that members should send to the Chairman particulars of the investigations that they are making or consider desirable, for the purpose of preparing a co-operative international programme of research designed to provide a basis for conservation measures.
4. That further studies should be made of the causes of losses among stored lobsters with special reference to the occurrence of *Gaffkya*.

Hydrographical Committee

Chairman: Dr. G. Böhnecke

I. Proceedings

The list of members was checked, and various changes were brought to notice.

The Committee's Administrative Report for 1957 was adopted.

The Hydrographer's report on the year's activities of the Service Hydrographique was adopted.

Mr. Lee proposed to omit the wind chart from the present *Synoptic Hydrographic Charts*. Rec. 1 was carried.

Mr. Lee further proposed that the area of the ICES *Synoptic Hydrographic Charts* should be extended to include the Distant Northern Seas area.

An *ad hoc* sub-committee (members: Lee (Chairman), Preobrazhensky, Stefánsson, Tait, and Smed), appointed to investigate this possibility pre-

sented the following proposal which was adopted by the Hydrographical Committee:—

"The sub-committee, considering that an extension of the Synoptic Chart area may be of value to both hydrographers and biologists, proposes to carry out an experiment to see if it is possible to extend the area covered by the charts so as to include all the sea north of latitude 63° N and east of longitude 30° W, paying particular attention to the Barents Sea, the seas around Iceland, and the fishing area between Iceland and Jan Mayen. They would do this by attempting to compile charts for two periods, (a) May —June 1958 when there are many data; (b) February 1958 when there are few data. All countries will be asked by Mr. Smed to send their data to Mr. Lee (Fisheries Laboratory, Lowestoft, England) who would then compile a series of charts for presentation at the Council Meeting in October 1959."

The Sub-Committee on the Preparation of Mean Charts of the Salinity and Temperature of the Surface Layer (Chairman: Dr. Dietrich) reported. Rec. 2 was carried.

The Sub-Committee for Mechanizing the Index of Hydrographic Data held by the Council (Chairman: Prof. Hela) reported.

The report[1]) was adopted, and the Committee expressed its high appreciation to Prof. Hela for the work of the Sub-Committee. Recommendations 3, 4, and 5 were carried.

After a lecture by Cdr. Lumby on the IGY World Data Centres for Oceanography (see item II below) the Committee adopted Rec. 6.

The Sub-Committee for Considering Standard Methods for Salinity Determination (Chairman: Mr. Hermann) reported.

Dr. Schleicher of the Woods Hole Oceanographic Institution and Dr. Cox of the British National Institute of Oceanography addressed the Committee (see II below).

The Chairman expressed the thanks of the Committee to Dr. Schleicher and Dr. Cox for their most interesting communications on this new approach to a very important matter. He further extended the Committee's thanks to Dr. Iselin, W.H.O.I., and Dr. Deacon, N.I.O., for making it possible for the two speakers to attend the meeting. Recommendations 7 and 8 were carried.

An interim report by Dr. Cooper on Units of Measurement in Chemical Oceanography was presented and discussed.

The Chairman expressed the Committee's gratitude for the report and also the hope that Dr. Cooper would give a final report next year.

The Sub-Committee on the International Geophysical Year 1957—58 (Chairman: Dr. Böhnecke) reported. The Sub-Committee, considering the implementation of the programme for the North Atlantic Polar Front Survey, found that the major part of the work had been or was being carried out. The Sub-Committee, therefore, considered that its task had been fulfilled and suggested its disbandment. The report was adopted, Recs. 9 and 10 were carried, and the Sub-Committee disbanded.

The Sub-Committee for the Investigation of Sub-Arctic, Deep-Water Overflow across the Iceland-Faroe Ridge (Chairman: Dr. Tait) reported. Rec. 11 was carried.

The Sub-Committee on the Co-ordination of Hydrographic Investigations in the Baltic (Chairman: Prof. Hela) reported. As Prof. Hela asked to be relieved from the chairmanship of the Sub-Committee, Prof. Dietrich was elected Chairman.

A survey giving information about the routine observations carried out regularly in the member countries was distributed and adopted.

Preliminary plans which have been notified for hydrographic work in the member countries in 1959 were tabled.

The Chairman drew attention to the so-called North Sea Tower Plan sent by UNESCO to ICES for comments.

Mr. van Duijnen Montijn tabled Prof. Groen's "Memorandum on the hydrographic possibilities of an observation platform in the North Sea." The Committee recommended that if such a platform were introduced its position should be as far north as possible. It was decided to make a request to England, Germany, USA, and USSR for information about experience with regard to such platforms.

Dr. Böhnecke having expressed his firm desire to retire from the chairmanship at this present meeting, a nominating committee consisting of Messrs. Lee, Dietrich, Hela, and Kullenberg was formed. Mr. Lee expressed the great regret of the Hydrographical Committee that Dr. Böhnecke felt unable to continue as Chairman and warmly thanked him for his wise and skilled guidance of the Hydrographical Committee during a difficult period of world-wide expansion and intensified international oceanographical effort.

The nominating committee proposed Dr. Tait as new Chairman and he was elected unanimously.

Dr. Böhnecke thanked the Hydrographical Committee for their co-operation and goodwill during his period of chairmanship, which had been one of deep interest to him because he felt that the Committee fulfilled a significant and important international rôle.

In taking over the chairmanship Dr. Tait said he was very conscious of the honour bestowed upon him and he would, as far as he was able to, follow the great examples of his eminent predecessors.

II. Communications

The following papers were presented:—

J. R. Lumby: "The IGY World Data Centres for Oceanography."

[1]) To be printed in *Journal du Conseil*, **25** (1).

O. H. Sælen: "Punched-card treatment of hydrographic observations on the electronic computer IBM 650."

P. Groen: "Memorandum on the hydrographic possibilities of an observation platform in the North Sea."

K. Schleicher: "The Woods Hole salinometer."

R. A. Cox: "The performance of the electrical salinometer and the problem of a suitable reference standard."
Discussion of the above two papers: Messrs. Barnes, Preobrazhensky, Svansson, Hermann, Hela, Böhnecke, and Mosby.

W. Krauss: "Our knowledge about internal waves in the northern North Atlantic Ocean."
Discussion: Messrs. Mosby, Fjeldstad, Kullenberg, Lee, Carruthers, and Hela.

E. Føyn: "A new apparatus for measuring oxygen in the Sea."
Discussion: Dr. Barnes.

J. H. Steele: "Observations of deep-water overflow across the Iceland-Faroe Ridge."

J. N. Carruthers and A. J. Lee: "A note on the uses of some new types of current meter."

J. N. Carruthers and A. J. Lee: "Current measurements with the 'Pisa' current indicator in the Norwegian and Greenland Seas."

J. B. Tait: "Bottom current measurements on the Wyville Thomson Ridge by the Carruthers 'Pisa' subsurface current indicator."

J. B. Tait: "Bottom current measurements between Faroe Bank and the Faroe Islands by the Carruthers 'Pisa' subsurface current indicator."
Discussion of the above 5 papers: Messrs. Hermann, Mosby, Lumby, Lee, Dietrich, Carruthers, Hela, Preobrazhensky, Tait.
Dr. Carruthers presented a short film on a new totalizing current meter.

H. Mosby: "The renewal of the deep water layers in the Norwegian Sea."
Discussion: Mr. Lee.

B. Jaragov: "Main conclusions from the observations carried out in September 1957 north of Iceland."
Discussion: Mr. Stefánsson.

A. Alexejev: "The hydrographical conditions in the northern part of the Denmark Strait, August 1957."
Discussion: Dr. Tait.

J. Filarski: "Hydrographic observations in the North Sea in May 1958."
Discussion: Prof. Demel.

K. Zagrodzki: "Temperature and salinity of the southern Baltic waters, August 1957—May 1958."
Discussion: Messrs. Kullenberg and Demel.

K. Zagrodzki: "State Institute for Hydrology and Meteorology, Oceanographic Department, Gdynia."

K. P. Shirokov: "Temperature and salinity in the Baltic Sea in May—November 1957."
Discussion: Messrs. Demel and Carruthers.

I. M. Soskin: "Hydrological conditions of the Baltic Sea and solar activity."
Discussion: Messrs. Hela and Carruthers.

M. Picotti: "Recherches océanographiques dans l'Adriatique en 1955."
Discussion: Messrs. Kullenberg, Desbrosses, Wimpenny, and Demel.

V. Fedosov and K. Spichak: "Hydrochemical research in the area from the Azores to the Gulf of Guinea in the spring and autumn 1957 with the R/V 'Kazan'."
Discussion: Mr. Lee.

K. P. Andersen: "The climatic change in the North Sea 1897—1939 in the light of observations from the Danish lightvessel 'Horns Rev'."
Discussion: Dr. Carruthers.

III. Recommendations

1. The Hydrographical Committee recommends the cancellation of the wind charts issued with the monthly *Synoptic Hydrographic Charts*, since the publication by Dietrich, Carruthers, *et al.* on Wind Conditions over the Seas around Britain during the Period 1900—1949 will be continued.
2. Having heard the report of the meeting at Hamburg on 24.—25. June 1958 of the Sub-Committee on the Preparation of Mean Charts of the Salinity and Temperature of the Surface Layer and on the progress of the work of the Sub-Committee during the year, and having noted with appreciation the valuable assistance that the Sub-Committee has received from a number of institutions, the Hydrographical Committee recommends that the Sub-Committee continue its work.
3. Referring to the report from the Sub-Committee for Mechanizing the Index of Hydrographic Data held by the Council, the Hydrographical Committee, having thoroughly investigated the situation under which the Service Hydrographique is now working as well as the effect of the ever increasing amount of data to be handled by the Service Hydrographique, feels very strongly that the above urgent problem can be solved only through the immediate mechanization of the Index and recommends this to be undertaken. The estimated costs for this purpose for the budget year 1958—59 are kroner 15,650.
4. The Hydrographical Committee recommends:—
   (a) that the scheme for hydrographic punched cards proposed in the report from the Sub-Committee for Mechanizing the Index of Hydrographic Data held by the Council be adopted by the Council;
   (b) that relevant institutions and organizations are informed about the Council's adoption of the above-mentioned scheme.
5. Considering that the Service Hydrographique of the ICES will need further assistance of the Sub-Committee for Mechanizing the Index of Hydrographic Data held by the Council in the practical steps of the introduction of the hydrographic IBM system, as well as in the application of the

IBM cards in the preparation of the *Bulletin Hydrographique*, the Hydrographical Committee recommends that the Sub-Committee's work be continued under the above terms of reference.

6. The Hydrographical Committee has heard with appreciation an account of the IGY World Data Centres for Oceanography and believes that the establishment of permanent World Data Centres for Oceanography would be of great value.
7. The Hydrographical Committee, considering the improvements made by SCHLEICHER, BRADSHAW, and COX in the determination of salinity by electrical conductivity measurements to be of very great importance to oceanography, recommendends:—
   (a) that further investigations into the preparation of a satisfactory conductivity standard should be made conjointly by the Standard Sea Water Service of IAPO and the Sub-Committee for Considering Standard Methods for Salinity Determination;
   (b) that the Council for this purpose, which will of necessity involve some expense, should provide a subvention which need not exceed kroner 1,000.
8. In view of the need for further investigations on the electrical conductivity method for salinity determination, the Hydrographical Committee recommends that Dr. R. A. COX be made a member of the Sub-Committee for Considering Standard Methods for Salinity Determinations.
9. The Hydrographical Committee recommends:—
   (a) that at the end of 1958 the Service Hydrographique should prepare and issue a list and a map showing the investigations carried out under the North Atlantic Polar Front Survey;
   (b) that the data collected under the above project be sent to the Service Hydrographique as early as possible.
10. The Hydrographical Committee recommends that a Special Meeting for the discussion of the results of the North Atlantic Polar Front Survey be held at a time adjoining the Council Meeting in 1959, with Dr. J. B. TAIT as Convener, Mr. A. J. LEE as Hydrographical Reporter and the nominee of other interested committees as Biological Reporter.
11. The Hydrographical Committee recommends that the multi-ship investigations over the region of the Iceland-Faroe Ridge, as proposed for the month of June 1959, should be postponed until June 1960 in order
    (a) to allow time for the development of various mechanical or servo-mechanical recording apparatus which is now in progress and
    (b) to derive maximum advantage from the results of the IGY investigations.

    At the same time the Committee recommends the continuance or repetition during 1959 of such significant investigations as those described in papers to the 1958 meeting of the Hydrographical Committee by Messrs. STEELE, TAIT, CARRUTHERS, and LEE.

Plankton Committee

Chairman: Prof. E. STEEMANN NIELSEN

I. Proceedings

The list of members was checked. The reports on work done in 1957 were adopted.

A report by Dr. FRASER about the progress in publishing the Plankton Identification Sheets was presented. It was agreed that the Chairman should write to Dr. FRASER thanking him for the splendid work done by him.

A special meeting on zooplankton in 1960 was discussed. It was decided to appoint a small working group—the Chairman, Dr. FRASER, and Prof. THORSON—to outline a programme of such a meeting.

The Central Agency for C-14 determination was officially opened.

It was agreed to recommend to the Consultative Committee that a biological session be included in a possible symposium on the IGY data in 1959.

At the meeting of the Plankton Committee the need for advice from hydrographers was discussed and it was decided to submit a recommendation to the Consultative Committee.

Dr. COLE outlined the progress of preparing monographs on flagellates.

Professor E. STEEMANN NIELSEN was re-elected Chairman.

II. Communications

J. H. FRASER: "Scottish plankton investigations in Icelandic waters."

E. Steemann Nielsen: "The pattern of productivity at high latitudes near fronts."
Grim Berge: "Plankton work in the Norwegian Sea in 1958."
J. Krey: "Plankton work by the German ships in the North Atlantic during the IGY."

III. Recommendations

1. The Plankton Committee has felt the need for advice from hydrographers at its meetings and is anxious that this need should be met in future.

2. The Plankton Committee strongly recommends the arrangement of a special biological session if a symposium on the IGY data is decided upon for the meeting in 1959.

Statistical Committee

Chairman: Dr. J. Lundbeck

I. Proceedings

Bulletin Statistique for 1956 was presented and several minor improvements for future issues were discussed. Discrepancies between statistical data for the western Atlantic in the ICNAF and ICES reports will be cleared between the offices of both bodies. The Committee expressed its appreciation to the Secretary General for the publication of the *Statistical News Letters*, amounting to five issues (Nos. 2—6) since the last Council Meeting.

Dr. J. Lundbeck was re-elected Chairman.

II. Recommendation

In view of the increasing use of the *Bulletin Statistique* in scientific evaluations of exploited fish stocks by the Permanent Commission and the Liaison Committee the Statistical Committee recommends that the Secretary General should visit those countries for which delays have been experienced in obtaining satisfactory statistics with a view to accelerating and improving the presentation of statistics by the Council.

VERSION FRANÇAISE

Rapport et Recommandations du Comité Consultatif

Président: Dr. A. E. J. Went

I. Compte-rendu

1. A la première séance le Président attire l'attention des membres sur le rapport de l'organisation des comités soumis par le Comité *ad hoc*, composé de MM. Went, Rollefsen et Korringa, et il demande aux membres de donner, à la seconde séance, leur avis sur les propositions exposées dans le rapport. Le Président prie également les membres de pressentir la pensée de leurs comités à l'égard d'une modification de la date des futures réunions du Conseil, de façon que celles-ci ne se tiendront plus dans la première semaine d'octobre, mais au milieu de mai. A la seconde séance du Comité Consultatif les membres décident de suspendre la décision jusqu'à la prochaine réunion du Conseil.

2. Organisation des comités.

A la seconde séance il est convenu qu'en modifiant les publications, ce problème se dénouera, et la recommandation 1 est adoptée.

3. Rapports des comités.

Les rapports des comités, ainsi qu'un rapport du Comité Editorial, se trouvent sur la table. Les membres discutent des divers sujets à l'égard du *Journal du Conseil*, et afin que les dépenses d'impression demeurent dans les limites budgétaires prévues, il est décidé de réduire en 450 pages le volume du *Journal du Conseil*. Il est convenu de cesser la publication du "Current Bibliography" dans le *Journal du Conseil* à partir du volume 25, si la FAO indique qu'elle a l'intention de poursuivre à l'avenir sa publication de la "Current Bibliography for Fisheries Science". Ceci permettra la publication du presque le même nombre de contributions que celui publié dans le volume présent (Vol. 24). Il est également décidé, qu'au moment que les demandes de tirages-à-part excèdent 300 exemplaires, il sera laissé à la discrétion du Secrétaire Général d'en faire un prix, outre des frais d'impression.

Chacun des présidents fait un exposé sur le rapport de son comité, et les recommandations sont délibérées. Une recommandation de tenir, avant la prochaine réunion du Conseil, une réunion spéciale scientifique en relation avec les études de l'AGI est adoptée (rec. 5). Les recommandations impliquant des frais sont traitées spécifiquement, et les recommandations 6a et b et 7 sont fortement appuiées.

Etant donné que la discussion traitant la proposition d'une convention internationale pour la Baltique n'a mené à aucun résultat, la recommandation 2 du Comité des Mers Baltique-Belts (sur les mêmes lignes que celle de l'année précédente) est adoptée (rec. 3).

Conformément à la demande du Comité du Hareng il est convenu qu'un Groupe de Travail élaborera un rapport sur les expériences de marquages du hareng sur le Bløden Ground. Le Comité Consultatif donne également son adhésion à la recommandation du Comité des Mers Nordiques Proches, qu'un Groupe de Travail sera établi pour préparer un programme pour le marquage de la sole dans la Mer du Nord sur un plan international.

Le Prof. Nikolsky donne un compte-rendu du Symposium du Saumon et de la Truite de Mer, tenu avant la réunion du Conseil; il est convenu de recommander la publication des contributions présentées au Symposium. Les contributions seront rédigées par le rapporteur (rec. 2).

Les membres du Comité consentent à la proposition qu'après la réunion du Conseil en 1959 le CIEM participera à un Symposium du Sébaste (rec. 8).

4. La Presse.

L'importance d'une bonne presse avant et après les réunions du Conseil est soulignée par plusieurs membres et la recommandation 9 est adoptée.

Le Dr. A. E. J. Went est réélu Président.

II. Recommandations

1. Organisation des Comités

(a) Il est convenu, que le Rapport Administratif des divers comités sera continué comme auparavant, contenant des propres renvois, et que le Secrétaire Général sera chargé de rédiger les rapports de tous les comités.

(b) Il est également décidé que les *Annales Biologiques* seront limitées à contenir des travaux faits dans les comités géographiques, sauf dans les cas où il s'agit des travaux faits sur les coquillages, le saumon et la truite, le hareng et les poissons gadoïdes.

2. Publications

Il est convenu que les contributions présentées au Symposium du Saumon et de la Truite de Mer seront rédigées par le rapporteur et publiées *in extenso* par le Conseil dans les *Rapports et Procès-Verbaux*. Les frais seront approximativement de c.d. 8.000.

3. Démarches pour le Bureau

Ayant discuté de la situation actuelle des stocks de poisson dans la Baltique, le Comité des Mers Baltique-Belts s'est rendu compte qu'il est urgent d'adopter des mesures internationales de protection. C'est pourquoi il recommande que les représentants des pays membres de la Baltique se réunissent dans le lieu qui leur conviendra pour négocier une convention pour la protection des stocks de poisson de la Baltique.

4. Programmes Internationaux du Marquage du Hareng et de la Sole

(a) Le Comité estime que la campagne internationale de marquage du hareng effectuée en 1957 et 1958 s'est révélée extrêmement utile et recommande qu'elle se poursuive dans l'avenir en fonction des besoins. Il est décidé de demander au Dr. Bertelsen et à M. Andersen (Copenhague) ainsi qu'à M. Gulland (Lowestoft) de compiler les matériaux recueillis pendant la campagne de marquage de 1958.

(b) Le Comité est aussi d'avis qu'un Groupe de Travail composé d'un membre de chaque pays participant à la pêche de la sole dans la Mer du Nord sera créé et chargé d'élaborer un programme pour le marquage de la sole sur un plan international.

5. Réunion Spéciale

Il est convenu qu'une réunion spéciale se tiendra le premier, le 2 et le 3 octobre 1959 avant la prochaine Réunion du Conseil pour discuter des résultats hydrologiques et biologiques des études de l'AGI faites en 1958.

Le Dr. J. Tait est prié d'agir à titre d'organisateur. Il est décidé que le Dr. Cushing (Lowestoft) sera désigné rapporteur biologiste, et que M. A. Lee sera désigné rapporteur des donnés hydrologiques.

6. Classification des Données Hydrologiques

(a) Eu égard à l'augmentation constante du volume de données qui font l'objet des travaux du Service Hydrographique il est décidé, que la mécanisation de l'Index de ce Service sera entreprise à une dépense prévue de 15.650 c.d. pour 1958—1959.

(b) Il est ensuite décidé que de nouvelles recherches pour la préparation de Standard de conductivité satisfaisant seront entreprises par le Service des Standards de l'Eau de Mer de l'AIOP en collaboration avec le Sous-Comité pour l'Etude des Méthodes Standard de Détermination de la Salinité. Les dépenses nécessaires seront d'environ 1.000 c.d.

7. Amélioration des Données Statistiques

Eu égard au fait que la Commission Permanente et le Comité de Liaison ont de plus en plus recours au *Bulletin Statistique* pour évaluer les stocks de poissons exploités, la Comité Statistique recommande que, dans le but d'accélérer et d'améliorer la présentation des statistiques du Conseil, le Secrétaire Général se rende dans les pays qui ont tardé à fournir des statistiques satisfaisantes. Les dépenses n'excèderont pas 1.500 c.d.

8. Coopération Internationale

Il est décidé de recommander au Conseil que l'invitation de l'ICNAF au CIEM de participer à l'organisation du Symposium du Sébaste lors de la Réunion du Conseil en 1959 soit acceptée.

9. La Presse

Il est convenu, que la presse sera régulièrement renseignée sur les travaux et les réunions du Conseil.

Rapports et Programmes des Comités

Comité des Mers Nordiques Lointaines

Président: M. Jón Jónsson

I. Compte-rendu

Le Président souhaite la bienvenue aux membres et aux invités et exprime la peine profonde qu'il ressent de la mort du Président du CIEM, le Dr. Å. V. Tåning. Le Président rend hommage aux travaux du Dr. Tåning dans ce Comité et dans l'ancien Comité du Secteur du Nord-Ouest.

Tous les membres du Comité sont présents sauf les représentants de la Finlande, de l'Irlande et de la Pologne. Le Portugal est admis à faire partie du Comité, et il est représenté par le Dr. Ruivo. Différentes modifications sont apportées à la composition du Comité.

Le Rapport Administratif est adopté sans commentaires.

Le Professeur Bückmann ouvre une discussion sur les recherches biologiques menées en rapport avec l'Année Géophysique Internationale et la recomman-

dation 1 est adoptée après quelques échanges d'opinions.

Le Symposium sur le Sébaste, qui doit être organisé en 1959 par le CIEM et l'ICNAF fait l'objet d'une assez longue discussion. Le Dr. POULSEN rappelle les propositions présentées à la dernière réunion de l'ICNAF. Le Comité décide d'ajouter une nouvelle question au programme du Symposium: "Le sébaste devant les conditions hydrographiques". La recommandation 2 est adoptée.

M. JÓN JÓNSSON est réélu Président pour l'année à venir.

II. Communications

A. KOTTHAUS: "Composition of the German redfish landings at Bremerhaven in respect of the different *Sebastes* types (August to December 1957)".

U. STEFÁNSSON: "Recent years variation in the hydrographical and chemical conditions of North Icelandic waters".

A. SIGURÐSSON: "A preliminary report on Icelandic plaice investigations".

J. MAGNÚSSON: "Preliminary report on a redfish cruise to the Labrador Sea".

III. Programme de Travail

L'Allemagne présente le programme de "Anton Dohrn" pour 1959, mais les autres pays ne sont pas encore en mesure de fournir les programmes de leurs croisières dans le secteur. Ces programmes seront, cependant, communiqués au début de l'année 1959 par l'intermédiaire du Bureau Central.

IV. Recommandations

1. Le Comité des Mers Nordiques Lointaines est d'avis qu'il faudrait dès que possible passer en revue les résultats hydrographiques et biologiques des études de l'AGI pour 1958. Le Comité recommande que, conformément aux décisions du Comité Hydrographique à cet égard, une réunion scientifique *ad hoc* ait lieu lors de la Réunion Annuelle du Conseil en 1959.

2. Le Comité accueille avec satisfaction la décision de l'ICNAF d'organiser un Symposium du Sébaste en Europe lors de la réunion du Conseil en 1959 et recommande fermement au CIEM d'accepter l'invitation de l'ICNAF de participer à l'organisation de la réunion.

Comité des Mers Nordiques Proches

Président: Dr. P. KORRINGA

I. Compte-rendu

Le Président ouvre la séance, en souhaitant la bienvenue aux membres et aux invités. La liste des membres est vérifiée et remise à jour. Le Rapport Administratif pour 1957 est adopté. Le Président informe les membres que les épreuves des articles à paraître dans les *Annales Biologiques*, seront désormais envoyées à leurs auteurs pour correction, car l'ancienne méthode, qui consistait à les faire circuler au cours des réunions n'était pas satisfaisante. Les auteurs sont priés de renvoyer les épreuves corrigées au Secrétariat aussi rapidement que possible. Le Président invite les membres à présenter leurs manuscrits pour les *Annales Biologiques* sous une forme aussi parfaite que possible, et à éviter des longueurs inutiles, en particulier lorsqu'il est possible de se reporter à des articles antérieurs. Il les prie de faire en sorte que leur publication soit possible au cas où la langue utilisée n'est pas la langue maternelle de l'auteur. Les membres sont informés que le Comité *ad hoc*, ayant étudié la possibilité d'une réorganisation des comités, a jugé cette réforme inutile, mais que les objections présentées antérieurement pouvaient être satisfaites par l'élaboration d'un index pour les *Annales Biologiques*, où figureraient les auteurs et les sujets traités.

La recommandation sur la recherche concernant le merlan, adoptée en 1957, fait double emploi avec un questionnaire détaillé distribué aux pays membres par le "Comité des Problèmes", établi en octobre dernier par la Commission Permanente de l'"Overfishing". Une documentation importante a été réunie de cette façon, puis classée par les membres cooptés du Comité de Liaison. Il est donc inutile que le Comité des Mers Nordiques Proches fasse un rapport au Comité de Liaison à ce sujet.

La demande du Comité Hydrographique, exprimant le désir de commenter son programme à long terme du point de vue biologique fera l'objet d'une circulaire que le Président se propose d'envoyer aux pays membres. Ceux-ci pourront alors étudier soigneusement cette importante question. Le Président enverra au Secrétariat un résumé des réponses reçues.

A la demande du Président du Comité Consultatif, les membres ont délibéré pour établir si le mois d'octobre était ou non la période de l'année la mieux choisie pour les séances du Conseil. Plusieurs d'entre eux préféreraient le mois de mai ce qui laisserait

assez de temps pour compiler les données recueillies pendant la saison précédente, et ne troublerait pas les recherches en mer sur le hareng, par exemple. Le choix du mois de mai permettrait également de préparer plus longuement les documents, et les faits présentés seraient plus complets.

Le Dr. P. Korringa est réélu Président.

II. Communications

Les rapports suivants sont présentés au Comité et discutés:—

E. Leloup: "Le merlan au large de la côte belge".

R. J. H. Beverton, A. R. Margetts, & J. A. Gulland: "Progress report on English whiting tagging in the Irish sea".

R. Gamble: "Some recent Scottish whiting investigations".

E. Bertelsen & K. Popp Madsen: "Some observations on the biology and fishery of the sand-eel (*Ammodytes*)".

A. R. Margetts: "Some outstanding problems of the population biology of the North Sea sole". (Avec une postface par R. J. H. Beverton & L. K. Boerema).

III. Programme de Travail

Le programme provisoire de l'Angleterre et du Pays de Galles est présenté et discuté. Le fait que les programmes des autres pays ne sont pas encore prêts est dû à la date de la réunion, longtemps avant que le programme pour 1959 doive être entrepris, et alors que de nombreuses sections du programme de 1958 sont encore en cours de réalisation.

Le Président presse les membres du Comité de lui transmettre leurs programmes pour 1959, même s'ils ne sont pas encore définitifs, afin que les pays membres puissent en prendre connaissance, car c'est là une condition importante du développement de la coopération et de la coordination du travail sur le plan international.

IV. Recommandation

La discussion du rapport de M. Margetts sur la sole de la Mer du Nord, complété par un commentaire de M. Beverton et de M. Boerema conduit à l'adoption de la recommandation suivante:—

Création d'un groupe de travail, composé d'un membre de chacun des pays qui participent à la pêche de la sole dans la Mer du Nord, et chargé d'élaborer un programme pour le marquage des soles sur un plan international.

Comité des Mers Baltique-Belts

Président: Dr. Aa. J. C. Jensen

I. Compte-rendu

La liste des membres est vérifiée. Le Rapport Administratif pour 1957 est présenté aux membres pour correction.

Les propositions concernant l'organisation des comités, et les *Annales Biologiques* sont discutées et il est convenu qu'il serait préférable que les rapports paraissant dans les *Annales Biologiques* se conforment aux propositions du Comité *ad hoc*.

Le Dr. Aa. J. C. Jensen est réélu Président.

II. Communications

K. Demel & Z. Mulicki: "Quantitative studies on the Epibenthos in the southern Baltic".

Z. Mulicki: "The polychaete *Harmothoë sarsi* Kinberg and its environment in the Baltic".

P. Ciszewski & K. Demel: "Experiments on estimating the stock of *Furcellaria fastigiata* in the Puck Bay by means of diving methods (Gulf of Gdańsk)".

A. Glowinska: "Hydrographical conditions in the southern Baltic, January 1958".

T. F. Dementjeva: "Prospects of fishing in 1959 in the eastern part of the Baltic".

Sven G. Segerstråle: "Observations on the stock composition of *Macoma baltica* in the coastal waters of southern Finland during the period 1926—1958".

Aa. C. J. Jensen: "The influence of predatory animals upon the stocks of fish and the yield of the fisheries".

III. Programme de Travail

Le programme à longue échéance est discuté et le travail pour l'année à venir est organisé de manière à permettre de réaliser les recherches les plus indispensables, en particulier le rassemblement de données pour des études dynamiques de pêches.

Les travaux des années précédentes seront poursuivis. Il convient d'intensifier la campagne de marqage des harengs.

Tous les membres du Comité sont d'accord pour reconnaître qu'il faut allouer davantage de temps aux réunions du Comité.

V. Recommandations

1. Le Comité recommande que le Danemark poursuive ses observations hydrographiques courantes dans la fosse de Bornholm près de Christiansø.

2. Le Comité des Mers Baltique-Belts, ayant discuté de la situation actuelle des stocks de poisson dans la Baltique, se rend compte qu'il est urgent d'adopter des mesures internationales de protection. C'est pourquoi il recommande, comme il l'avait déjà fait en 1957, que les représentants des pays membres de la Baltique se réunissent dans le lieu qui leur conviendra pour négocier une convention pour la protection des stocks de poisson de la Baltique.

Comité Atlantique

Président: Dr. J. Furnestin

Compte-rendu

La liste des membres du Comité est passée en revue. Le Rapport Administratif est adopté. Puis vient la question de savoir si certaines notes destinées aux *Annales Biologiques* doivent être présentées dans les comités géographiques ou dans les comités spéciaux. Les membres du Comité donnent leur avis sur la fixation des Assemblées plénières du Conseil International en mai plutôt qu'en octobre; la majorité se prononce pour le *statu quo ante*.

Le Président annonce qu'il a reçu une lettre du Professeur Bückmann qui suggère de proposer une réunion spéciale sur les résultats d'ordre biologique acquis au cours de l'Année Géophysique Internationale pendant laquelle de nombreux navires de recherches ont obtenu dans chaque secteur géographique des résultats intéressants avec des techniques nouvelles. Cette réunion spéciale pourrait se tenir lors de la prochaine Assemblée plénière: cette proposition est adoptée par le Comité Atlantique.

Le programme à long-terme de travaux à la mer établi par le Comité Hydrographique pour les différents secteurs est adopté par les membres du Comité.

Le Dr. E. Leloup est élu Président.

II. Communications

J. Berthois & R. Brenot: "La morphologie sous-marine du talus du plateau continental entre le sud de l'Irlande et le Cap Ortogal (Espagne). Mise au point des resultats obtenus".

L. Vincent-Cuaz: "Contribution à l'étude biométrique de la langouste verte mauritanienne *Palinurus regius*".

L. Vincent-Cuaz: "Contribution à l'étude biométrique de la langouste rose *Palinurus mauritanicus*".

J. M. Navaz: "Poissons rares sur la côte Basque d'Espagne (1946—1957)".

M.-L. Furnestin: "Les méduses de la côte Atlantique du Maroc".

J. Furnestin, J. Dardignac, Cl. Maurin, A. Vincent, R. Coupé & H. Boutière: "Aperçu sur l'écologie des poissons du Maroc Atlantique".

III. Programme de Travail

Le Comité Atlantique doit traiter de sujets généraux n'entrant pas dans le cadre des comités spéciaux, tels que des questions de faunistique de vertébrés et d'invertébrés, en liaison avec les conditions hydrologiques; la colonisation des eaux septentrionales du domaine atlantique par des espèces méridionales: lusitaniennes et subtropicales; même des sujets de morphologie et de géologie sous-marines. Quatre des communications présentées concernent des questions de cet ordre.

Les délégués du Portugal annoncent une étude en cours sur le stock et la maturité sexuelle de *Trachurus trachurus*.

IV. Recommandation

Le Comité Atlantique recommande qu'une réunion spéciale sur les résultats biologiques obtenus par les navires de l'Année Géophysique Internationale se tienne lors de la prochaine Assemblée plénière.

Comité des Pêches Comparées

Président: Dr. C. E. Lucas

I. Compte-rendu

Le Président ouvre la séance en souhaitant la bienvenue à tous les membres du Comité et aux nombreux visiteurs présents. Tous les pays membres sont représentés, mais quelques modifications sont apportées à la composition nominale du Comité.

Compte tenu de corrections mineures, le Comité adopte le Rapport Administratif pour 1957.

Après la discussion de l'Ordre du Jour et de la liste des communications, le Comité décide de s'intéresser en premier lieu aux questions plus générales traitant des rapports et des programmes, puis d'étudier les diverses communications, et enfin de s'occuper plus particulièrement du programme du Comité pour 1958—1959.

Avant d'ouvrir la discussion sur les résultats obtenus au cours du programme coordonné pour 1957—1958, le Président rappelle au Comité les tâches que lui a assignées le Comité de Liaison, et l'informe qu'il lui appartient aussi de traiter un problème particulier auquel s'est heurtée la Commission Permanente au cours de ses récents travaux. Au nom du Président du Comité de Liaison, les membres sont priés "d'étudier l'influence de différents gabarits des mailles, des marquages et de matériaux des chaluts sur l'écorchement du poisson dans la pêche au chalut" et de faire part dès que possible au Président de ce Comité de tout renseignement que l'on peut ou que l'on pourra se procurer.

Le Comité s'intéresse ensuite aux détails du programme coordonné, à la lumière des résultats obtenus. Ceux-ci représentent une collection importante de données, notamment sur la sélectivité relative à différents types de poissons, de fils, et d'engins de pêches. Il est maintenant possible d'obtenir des renseignements (portant quelquefois sur plusieurs expériences) sur chacun des besoins indiqués dans le tableau ci-dessous. Il existe de plus une documentation sur la sélectivité dans les chaluts légers, les différentes combinaisons de matériaux et d'accessoires dans la fabrication des chaluts, par rapport au taux du débit, etc.

Données de sélectivité

	+ indique les données recherchées					⊕ les données obtenues			
	Morue 110 mm	Morue 80 mm	Merlu 80 mm	Plie 110 mm	Plie 80 mm	Aiglefin 110 mm	Aiglefin 80 mm	Merlan 80 mm	Sole 80 mm
Chaluts									
Manille & Sisal	⊕	⊕	+	+		⊕	⊕	⊕	+
Coton	+	⊕	+	+	+	+	+	⊕	+
Chanvre	+	+	+		⊕		+	⊕	+
Nylon et Perlon	⊕	+	+	+	+	⊕	⊕	⊕	+
Autres synthétiques	⊕	+	+	+	⊕	+	⊕	⊕	+
		70 mm	70 mm	100 mm	70 mm		70 mm	70 mm	70 mm
Sennes									
Coton		+	+	+	⊕		+	+	+
Nylon & Perlon		+	+	+	⊕		+	+	+
Autres synthétiques		+	+	+	+		+	+	+

Ce tableau montre cependant qu'il n'y a pas de nouveaux renseignements sur le sélectivité de la morue et de la sole dans le secteur 80 mm, et de la plie dans le secteur 110 mm tandis que les renseignements sur les sennes à mailles et sur les chaluts de coton et de chanvre sont encore très incomplets. Cependant le travail se poursuit encore dans certains pays dans le cadre du programme de 1958.

Il est reconnu que ce premier essai de coordination a été réussi et il est décidé à l'unanimité de tirer des plans permettant la poursuite et l'extension de ce programme en 1959. Le Comité souligne en particulier la valeur, pour certains types de recherches, des travaux communs réalisés récemment par des navires de différents pays, Danemark, Allemagne, Hollande et Ecosse. Après discussion, les recommandations 1, 2, et 3 sont adoptées à l'unanimité.

De brefs résumés des dixhuit communications sont présentés dans l'ordre indiqué ci-dessous. Ils font l'objet de discussions au sein de groupes appropriés, traitant (a) des méthodes d'analyse, (b) des effets des engins protecteurs des culs de chaluts, (c) des facteurs déterminant le choix des mailles, (d) des variations de ces facteurs avec les conditions de chaque expérience, (e) des méthodes de mesure des mailles, (f) des autres types de méthodes de sélection, (g) de la classification du matériel de pêche, (h) de la théorie de la pêche, et enfin (j) de la variation de taille des poissons après leur mort. Des discussions intéressantes sont ouvertes sur chacune de ces questions

plusieurs membres des groupes de travail présen-
t des rapports provisoires comprenant des gra-
ques et des tableaux relatifs aux récentes données
la sélection proposées par les chercheurs suédois.
discussion qui s'ensuit conduit à l'adoption des
blutions 4, 5, et 6 exprimées ci-dessous.
A la fin de la réunion, le Dr. C. E. Lucas est réélu
sident.

Communications

Jones: "Some observations on the analysis of
election data".
Jones: "Some observations on cover effect".
J. H. Beverton: "The influence of design of cover
et on cod-end selectivity".
K. Boerema: "Mesh selection experiments: (a)
omparison of mesh selection of cod-ends of hemp
nd polyethylene (nymplex). (b) Effect of type of
ear on mesh selection data".
Cieglewicz & W. Strzyzewski: "The selectivity
f different parts of cod-ends".
Sætersdal: "Mesh selection data of Arctic cod
nd haddock".
J. C. Jensen: "Investigations on the selection
f plaice, dab, and cod by the cod-end meshes of
anish seine and light trawls".
Sætersdal: "Selectivity experiments with top-
ide chafers".
v. Brandt, J. Pope, & Roessingh: "International
esh selection experiments 1958".
Bertelsen, R. Jones, & M. Roessingh: "Inter-
ational comparative fishing experiments 1958".
v. Brandt: "Escapement of haddock through a
ire mesh cod-end".
Messtorff: "Length-girth measurements of cod
nd their relationship to mesh selection".
J. H. Beverton & B. C. Bedford: "On the
easurement of the bias and precision of the mesh
auge".
K. Boerema: "Note on the need for standardisa-
ion of mesh-measuring methods".
Sætersdal: "Selectivity processes in the 'skrei'
shery".
Treschev: "Abstract of the report: 'Classification
f fishing gear'".
N. Andreev: "The theory of fishing with purse
eine".
J. C. Jensen: "Change of the length of fish
fter death".

III. Résolutions

Le Comité des Pêches Comparées recommand:—

1. Que devant la valeur des résultats obtenus jusqu'à cette date par le programme 'coordonné' établi pour 1958, ce programme soit révisé et étendu conformément aux besoins mis en lumière par les résultats des travaux en 1958, qui serviront de guide aux opérations en 1959.
2. Il reconnaît que certaines catégories de renseignements sont obtenues plus facilement, ou ne peuvent être obtenues qu'au moyen d'expériences internationales de pêche, du type de celles effectuées en 1958; c'est pourquoi il attire l'attention des pays membres sur la valeur de ces programmes communs pour les navires de recherches.
3. Le Comité décide de nommer un sous-comité, composé du Président, assisté du Professeur von Brandt, de MM. Beverton et Parrish, et chargé de réviser le programme coordonné de 1958, ainsi que de transmettre ses propositions aux représentants des pays membres dans les plus brefs délais. Les membres de ce sous-comité sont priés d'indiquer notamment quels sont les problèmes pour lesquels le travail commun des navires de recherche sera le plus fructueux.
4. Les renseignements obtenus jusqu'à ce jour indiquent que le type de pièces de protection placées à la partie supérieure des culs de chaluts, et conseillé par l'ICNAF influe moins sur la sélectivité que les pièces de protection ordinaires bien ajustées, du type commercial. Le Comité décide cependant de faire poursuivre les travaux, pour déterminer le type de pièce de protection le mieux approprié.
5. Des exemplaires de toutes les communications seront transmis au Comité de Liaison; cependant, un sous-comité, composé du Professeur von Brandt, de MM. Parrish et Sætersdal sera invité à présenter des rapports sur ces communications, pendant le temps dont l'on dispose avant la réunion du Comité de Liaison.
6. Le Comité décide de recueillir des renseignements sur la diminution de taille des poissons après la mort, dans la pêche commerciale, en s'intéressant tout particulièrement aux changements avant, pendant, et au cours d'une assez longue période après *rigor mortis*, et en indiquant notamment les changements intervenus dans la première heure suivant la mort, et les conditions générales lors de la pêche des poissons.

Comité des Poissons Gadoïdes

Président: M. G. Rollefsen

I. Compte-rendu

Le Président ouvre la séance et évoque le souvenir du Président Åge Vedel Tåning. La liste des membres est vérifiée et adoptée avec des modifications mineures. Le Rapport Administratif pour 1957 est accepté.

M. Gunnar Rollefsen est réélu Président.

II. Communications

St. Rutkowicz: "The course of cod spawning in the southern Baltic in the spring of 1958".

E. Staneck: "Fluctuations of the Bornholm Basin cod stock in 1955—1958".

M. Ruivo & G. Quartin: "Résultats préliminaires des observations faites sur la morue (*G. callarias* L.) au Groenland (1958)".

A. Hylen: "Marking experiments on the Arctic cod".

N. A. Maslov: "Conditions of the stocks and abundance of cod in the southern Barents Sea".

G. Sætersdal: "Note on estimation of brood strength of Arctic cod and haddock".

G. Sætersdal & R. Beverton: "Progress report on joint investigations on Arctic cod".

III. Considérations

Les discussions sont divisées en trois chapitres: (1) le stock de morue dans la Baltique du sud; (2) le stock de morue dans les eaux du Groenland Occidental; et (3) le stock de morue dans les eaux de l'Arctique (Mer de Barentz—côte norvégienne). Des modifications remarquables dans la répartition, le taux de croissance et le taux de maturité sexuelle ont fait l'objet d'observations au cours des dernières années, aussi bien dans les stocks de morue de la Baltique que dans ceux du Groenland Occidental. La baisse du taux de croissance a eu une influence considérable sur le poids des prises totales.

Les résultats des recherches soviétiques, anglaises et norvégiennes sont comparables et mettent en évidence des changements radicaux dans la répartition et les possibilités de capturer la morue dans l'Arctique, ces dernières années, par rapport aux années précédentes.

La densité des stocks semble considérablement réduite. La situation des stocks de morue de l'Arctique a déjà été portée à l'attention de la Commission Permanente lors de sa dernière réunion et le Comité de Liaison en a référé au Comité des Poissons Gadoïdes. En conséquence le Président de ce Comité prie M. Beverton, M. Sætersdal et M. Boerema de préparer une liste des données disponibles dès à présent et d'élaborer un programme pour des travaux futurs. MM. Beverton et Sætersdal présentent un rapport sur l'état d'avancement de ce projet. Après discussion le Comité convient de recommander que de nouvelles mesures soient prises aussitôt que possible, et que des savants des pays intéressés se réunissent d'ici environ six mois pour voir s'il leur est possible de fournir des données nouvelles, et pour discuter le programme esquissé dans le rapport d'avancement des travaux.

Le rapport sur le marquage provoque également une discussion. Il est reconnu que la méthode utilisée pour capturer les morues qui seront marquées représente une condition très importante en ce qui concerne leurs chances de survivre, et que la technique de marquage pourrait être améliorée. Le Comité espère qu'une prochaine réunion spéciale sur le marquage aura pour objet l'étude des différents aspects des méthodes de capture des poissons pour les expériences de marquage, et des techniques de marquage elles-mêmes.

IV. Programme de Travail

La question de la coopération en mer entre les pays membres est discutée. Un certain nombre de pays ne sont pas actuellement en mesure de soumettre leur programme complet pour 1959, et il est décidé que les possibilités de coopération entre les diverses organisations intéressées seront discutées lorsque les programmes de croisières seront communiqués.

V. Recommandation

Comme suite à l'acceptation par le Comité du "Rapport d'avancement des recherches communes sur la morue de l'Arctique", présenté par MM. Beverton et Sætersdal, il est convenu que le Président convoquera une réunion de savants soviétiques, anglais, et norvégiens à Bergen en avril 1959, qui auront pour mission de réaliser le programme de travail tracé dans le Rapport d'avancement des travaux.

Le Comité pense que cette réunion durerait une semaine et les pays intéressés sont censés en assumer les frais.

Comité du Hareng

Président: M. O. Aasen

Compte-rendu

La liste des membres est vérifiée et quelques modifications sont apportées à la composition du Comité.

Le Rapport Administratif est présenté et adopté.

Au cours de la réunion les membres exposent leurs programmes de travail pour l'année prochaine.

La note du Rédacteur, concernant les *Annales Biologiques* est communiquée aux membres du Comité.

Le Comité prend en considération le sentiment exprimé dans le dernier paragraphe de l'Organisation des Comités datant de 1958 mais les membres sont persuadés qu'il ne conviendrait pas de l'adopter dans les travaux sur le hareng.

Le Dr. Höglund présente un rapport sur l'expérience internationale Bløden de marquage du hareng en 1958, et fait projeter un court-métrage pris au cours de l'expérience. Il est convenu que le travail de classification des écailles recueillies pendant l'expérience serait partagé entre les différents pays suivants: Angleterre, Suède, Allemagne, Pays Bas, URSS, Danemark, et Ecosse.

La proposition anglaise relative à l'opportunité de former les zones de pêche dans la Baie Sud de la Mer du Nord est étudiée au cours de la discussion des communications à ce sujet.

Le Comité considère la suggestion tendant à modifier l'horaire des futures réunions du Conseil et estime qu'une question d'heure ne justifie pas un changement.

M. B. B. Parrish est élu Président.

II. Communications

Les communications suivantes sont présentées et discutées:—

H. Hempel: "On the growth of otoliths in young herrings of the German Bight".

A. C. Burd: "*Calanus* and the herring".

B. B. Parrish & D. P. Sharman: "Otolith types amongst summer/autumn spawning herring in the northern North Sea".

I. G. Baxter: "Fecundities of winter/spring and summer/autumn herring spawners".

R. E. Craig: "Influence of temperature and wind on the herring fisheries of the north-western North Sea".

B. B. Parrish, A. Saville, R. E. Craig, I. G. Baxter, F. G. T. Holliday, & R. Priestly: "Observations on herring spawning and larval distribution in the Clyde estuary in 1958".

J. Popiel: "The growth-rate of the southern Baltic herring".

J. Popiel: "Preliminary results of the gill-raker counts in spring spawners of the Gulf of Gdańsk".

M. N. Krivobok: "The role of fat in the process of maturation of sexual products and spawning migrations of Salaka (Baltic herring)".

D. H. Cushing: "The conservation of the herring of the southern North Sea".

D. H. Cushing: "Recruitment of the North Sea herring stock".

A. C. Burd: "Recruitment and the North Shields fishery".

N. P. Biryukov: "On the distribution of herring in the North Sea".

L. N. Lisivnenko: "Distribution and behaviour of Salaka (Baltic herring) larvae and fry in the Gulf of Riga".

J. Ancellin & C. Nédélec: "Résultats préliminaires de la campagne de marquages de harengs dans le sud de la Mer du Nord et en Manche orientale, 'Président-Théodore-Tissier', novembre 1957".

J. J. Zijlstra: "The herring trawl catches in the Netherlands in the period 1947—1957".

J. J. Zijlstra: "Some data about the southern North Sea herring stock".

Ju. Ju. Marty: "Peculiarities of herring catches in 1958 in the Norwegian Sea".

O. Dragesund: "Remarks on the recovery of tags from the Norwegian herring fishery off North and East Iceland in 1958".

III. Recommandations

Le Comité estime que la Campagne Internationale de Marquage des Harengs effectuée en 1957 et 1958 s'est révélée extrêmement utile et recommande qu'elle se poursuive dans l'avenir en fonction des besoins. Il est décidé de demander au Dr. Bertelsen et à M. Andersen (Copenhague) ainsi qu'à M. Gulland (Lowestoft) de compiler les matériaux recueillis pendant la campagne de marquage de 1958.

Comité de la Sardine

Président: Dr. J. Cuesta

I. Compte-rendu

Tous les pays membres du Comité sont représentés à l'exception de l'Italie et l'URSS.

La liste des membres est revisée. Le Rapport Administratif est adopté et le Président donne lecture d'une communication du Comité Editorial au sujet de la présentation des *Annales Biologiques* à la réunion annuelle.

Les membres du Comité sont d'accord pour que les rapports aux *Annales Biologiques* soient inclus dans le Comité Atlantique.

Le Dr. J. Cuesta est réélu Président.

II. Communications

J. Elwertowski: "Preliminary investigations on the dynamics of the sprat in the southern Baltic".

W. Mańkowski: "Characteristics of the sprat spawning in recent years".

V. A. Borodatov: "Data on the biology of *Sardinella aurita* in the Cape Verde area".

F. Cabañas, M. Oliver et L. Molins: "Le frai de la sardine au Golfe de Cadix".

J. Cuesta: "Observations sur la biologie de la sardine à Santander 1957—1958".

III. Programme de Travail

La Belgique, l'Espagne, la France et le Portugal poursuivront le même programme de travaux que l'année précédente. L'Allemagne étudiera la quantité et la distribution des œufs et alevins de sardine et autres clupéidés. La Norvège suivra l'étude du recrutement du sprat au Skagerak ainsi que celui des races en moyen des méthodes chromatographiques. L'étude des populations du sprat en relation avec les conditions hydrologiques ainsi que des études biochimique sur la même espèce seront l'objet des travaux de la Pologne.

Comité des Poissons Scombriformes

Président: Dr. H. Vilela

I. Compte-rendu

Après quelques considérations préliminaires on a passé à l'ordre du jour.

La liste des membres est corrigée et les corrections prises en note.

Le Rapport Administratif est présenté et adopté.

La majorité des membres s'est prononcée favorablement à la publication des rapports, dans les *Annales Biologiques*, séparément par des sujets ou spécialité. Les membres se sont mis d'accord pour maintenir le mois d'octobre pour les Réunions du Conseil.

Le Dr. H. Vilela est réélu Président.

II. Communications

Les communications suivantes ont été présentées et discutées:—

H. Vilela et J. Santos Pinto: "Sur les Thons qu'on pêche au Portugal".

J. Hamre: "About the age composition of Norwegian tuna catches in the years 1954—58".

P. F. Meyer-Waarden: "Deutsche Untersuchungen über den Thunbestand in der Nordsee".

III. Programme de Travail

Allemagne: Etudiera les lieux de capture, taille, poids, conditions des gonades du thon rouge en Mer du Nord et fécondité et distribution des œufs du maquereau, également en Mer du Nord.

Belgique: Même programme que l'année dernière.

Espagne: Même programme que l'année dernière.

France: Etude du germon et du thon rouge dans le Golfe de Gascogne. Recherches sur *Katsowonus pelamis*.

Hollande: Etudes sur les façons de déterminer l'âge des maquereaux.

Norvège: Etudiera biologie et pêche et fera des marquages des thons rouges et des maquereaux.

Portugal: Etudiera écologie et pêche des thons rouges et fera des recherches sur les *Neothunnus* et *Parathunnus* des îles de Cap Vert.

IV. Recommandation

La suggestion de M. Olav Aasen recommandant des opérations de marquage des thons a été approuvée à l'unanimité.

Comité du Saumon et de la Truite

Président: Prof. G. Nikolsky

I. Compte-rendu

Le Président souhaite la bienvenue aux membres du Comité et aux invités. La liste des membres est vérifiée et les modifications nécessaires y sont apportées. Il est décidé d'envoyer un télégramme au Dr. Kändler, exprimant l'espoir d'un prompt rétablissement.

Le Rapport Administratif pour 1957 est discuté et adopté.

Les membres du Comité présentent leurs programmes de travail pour 1958—1959.

Le Comité discute du travail futur en relation avec la recommandation traitant des échelles à poissons (de la session de 1957), et adopte la recommandation 1.

Les recommandations du Symposium sur le Saumon sont discutées et adoptées.

Un groupe de travail est constitué pour l'étude des problèmes relatifs au saumon et à la truite dans la Baltique. Ce groupe est composé des représentants des pays suivants de la Baltique: Dr. Carlin (Président) et Dr. Lindroth (Suède), Dr. Lishev et Prof. Koshin (URSS), Prof. Halme (Finlande), M. K. Larsen et M. J. Knudsen (Danemark), Prof. Chrzan et Prof. Zarnecki (Pologne).

Le Professeur G. Nikolsky est réélu Président.

II. Communications

G. Alm: "Notes regarding the salmon fishery in the Baltic in the year 1957".

F. Chrzan: "Estimating the length and weight increases of salmon and sea trout caught by the Polish fishermen".

F. Chrzan: "Salmon and sea trout with spawning marks in Polish catches".

R. Kändler: "The German salmon fishery in the south-eastern Baltic in the seasons 1956—57 and 1957—58".

J. Nielsen: "Some notes on the distribution and biology of salmon in Greenland".

W. M. Shearer: "Further notes on sea trout transportation experiments, river Dee, Aberdeenshire".

E. Twomey & A. Hewetson: "Movements of salmon around Ireland—from Ardmere, county Waterford".

St. Zarnecki: "Specific growth of Atlantic salmon originating in the Vistula. Analysis of the scales collected in 1950 and 1951".

St. Zarnecki: "The factors influencing the early forming of 'winter bands' on the scales of Atlantic salmon and trout".

M. N. Lishev: "Difference in the structure of scales of Baltic salmon of various river populations".

III. Recommandations

1. *Recommandations sur les Echelles à Poissons.*

(a) Le Comité recommande de continuer à recueillir des renseignements sur les échelles à poissons et de préparer une bibliographie des documents sur les échelles à poissons publiés depuis 1930.

(b) Le Comité recommande aux pays participants de poursuivre les études sur les échelles à poissons utilisées avec succès, par rapport aux conditions écologiques.

2. *Recommandations du Symposium sur le Saumon et la Truite de Mer.*

(a) Le Comité recommande que les documents du Symposium soient rédigés par le Rapporteur et publiés *in extenso* par le Conseil.

(b) Que les pays membres considèrent tout particulièrement les effets des prédateurs sur les stocks de saumon et de truite de mer et que les employés des pêcheries obtiennent la collaboration d'autres savants (ornithologues par exemple) et d'autres personnes (chasseurs, pêcheurs à la ligne et autres sportifs) susceptibles de recueillir des renseignements à ce sujet; que les recherches spéciales se traduisent en méthodes de marquage utilisables pour évaluer l'intensité du pillage.

(c) Les pays membres devraient discuter d'abord par correspondance de ce problème, dans le but d'organiser des expériences en 1959.

(d) Le Comité recommande la préparation d'une bibliographie du marquage, comprenant des références aux sources des données non publiées ainsi qu'aux documents déjà publiés. Chaque pays sera invité à rédiger une courte introduction à la bibliographie qu'il présente.

(e) Le Comité recommande que tous les pays membres se livrent à des expériences ayant pour objet de déterminer la valeur comparée de différents types de marques et de diverses méthodes de marquage; ce programme fera appel à des équipes de différents pays, qui participeront à des campagnes de marquage communes, pour éprouver les différentes techniques.

(f) En raison de la nécessité de recherches plus approfondies sur tous les aspects de la biologie du saumon et de la truite de mer, tous les pays membres sont invités à entreprendre des études sur la production, la mortalité et l'effort de pêche, dans le but d'évaluer les forces dynamiques de la population des stocks de ces espèces.

(g) Le Comité du Saumon et de la Truite recommande la création d'un groupe de travail chargé d'étudier les problèmes concernant le saumon et la truite de mer dans la Baltique.

(h) Le Comité recommande que le groupe de travail sur le saumon dans la Baltique se réunisse si possible en Suède en mars 1959, pour poursuivre ses consultations.

(i) Les membres du Comité du Saumon et de la Truite tiennent à souligner que la présence parmi eux de l'observateur canadien leur a été extrêmement précieuse, et lui experiment leur reconnaissance. Ils sont persuadés qu'une semblable collaboration sera obtenue lors des prochaines réunions du Comité.

Comité des Mollusques et Crustacés

Président: Dr. H. A. Cole

I. Compte-rendu

Le Président souhaite la bienvenue aux membres. Aucune modification n'est apportée à la composition du Comité.

Le compte-rendu de la réunion de 1957 est présenté et discuté. Les questions particulièrement importantes sont mentionnées ci-dessous, ainsi que les recommandations approuvées.

Le Président rappelle aux membres l'importance de présenter les programmes de recherche assez tôt pour qu'ils puissent être distribués ce qui permettra la coordination des recherches.

A la demande du Président du Comité Consultatif, il est délibéré sur l'opportunité de tenir la réunion annuelle du CIEM en mai au lieu de septembre-octobre. Malgré le manque d'unanimité il est jugé que le retour à une réunion en mai permettrait une meilleure préparation des communications et des rapports qui pourraient ainsi être distribués avant l'ouverture de la séance, alors qu'avec la date actuelle cela présentait des difficultés en raison de l'abondance du travail d'été qui se prolongeait encore en septembre.

Le Dr. H. A. Cole est réélu Président pour l'année à venir.

II. Considérations biologiques

1. *Contrôle sanitaire—Standardisation des procédés.*

Le Président présente un nouveau rapport sur une étude comparative des méthodes françaises et britanniques employées dans les expériences bactériologiques des mollusques et crustacés, par le Dr. P.C. Wood. Il est convenu que ces travaux seront poursuivis, et la France, l'Angleterre, le Pays de Galles ainsi que les Pays-Bas sont priés de soumettre des rapports à la session de 1959.

2. *Recherches Internationales sur les stocks de Homard au large de la côte sud-ouest de Grande Bretagne.*

La France, l'Irlande, l'Angleterre et le Pays de Galles présentent des rapports d'avancement des recherches.

La nécessité de poursuivre et d'étendre ces travaux est reconnue.

3. *Nephrops.*

Il est remarqué, après présentation d'une communication du Dr. E. Leloup, que la pêche des *Nephrops* prend de l'extension dans de nombreux pays membres. Le Comité s'inquiète de la pression sur les stocks et discute de l'opportunité d'appliquer des mesures internationales de protection. Il est reconnu qu'il existe un besoin urgent d'études plus approfondies et la recommandation ci-dessous est approuvée.

4. *Causes des pertes chez les Homards mis en réserve.*

Le Dr. P. Korringa fait un rapport sur de nouvelles études de la maladie provoquée par *Gaffkya* chez les homards dans les réservoirs de barrage, et expose des méthodes de diagnostic de contrôle. Le Comité reconnait l'utilité d'une meilleure connaissance de l'extension de cette maladie et adopte la recommandation indiquée ci-dessous.

III. Communications

P. Korringa: "The Netherlands shellfish industry and the Delta plan".

H. Vilela & M. M. Correia Monteiro: "L'*Ostrea edulis* L. au Portugal".

R. H. Baird: "A preliminary account of a new half square metre bottom sampler".

T. Th. Roskam: "Short note on gaffkaemia in lobsters and ways to prevent it".

F. A. Gibson: "Progress Report on lobster research of Ireland for Shellfish Committee".

B. T. Hopper: "England and Wales. Lobster research 1958. Preliminary report".

P. F. Meyer-Waarden: "Die Frage der Abhängigkeit der Garnelenfangerträge von der Wassertemperatur".

E. Leloup: "Apropos de Langoustines".

N. Reynolds: "Further experiments on mussel putrification".

P. C. Wood: "Report of investigations related to the methods and standards for bacteriological examination of shellfish".

D. A. Hancock & A. E. Urquhart: "Methods for marking whelks. (*Buccinum undatum* L.)".

H. Vilela & M. M. Correia Monteiro: "Présence de copépodes chez *Mytilus edulis* L."
L. Faure: "Observations effectuées sur des homards pêchés au large de la côte sud de Grande Bretagne".

IV. Recommandations

1. Poursuite des études comparées des méthodes utilisées pour les expériences bactériologiques sur les mollusques et crustacés et des normes de contrôle sanitaire.
2. Poursuite des études conjointes des stocks de homard au large de la côte sud-ouest de la Grande Bretagne.
3. Le Comité, craignant de l'overfishing dans les stocks de *Nephrops* recommande à tous les pays membres, où cette pêche est importante, de procéder à de nouvelles études des stocks commerciaux. Il est recommandé aux membres d'envoyer au Président la spécification des études en cours ou de celles qu'ils estiment souhaitables, ce qui permettra d'élaborer un programme commun de recherche internationale servant de base à des mesures de conservation.
4. Le Comité recommande d'entreprendre de nouvelles investigations sur les causes des pertes chez les homards des réservoirs de barrage, en mentionnant notamment la présence de *Gaffkya*.

Comité Hydrographique

Président: Dr. G. Böhnecke

I. Compte-rendu

La liste des membres est vérifiée et diverses corrections prises en note.

Le Rapport Administratif du Comité pour 1957 est adopté. Le rapport de l'Hydrographe concernant le travail effectué par le Service Hydrographique au cours de l'année est adopté.

M. Lee propose de supprimer la carte des vents des actuelles Cartes Hydrographiques Synoptiques. La recommandation 1 est adoptée.

M. Lee propose également d'étendre le secteur représenté dans les Cartes Hydrographiques Synoptiques aux mers nordiques lointaines.

Un sous-comité *ad hoc* (membres: MM. Lee (Président), Preobrazhensky, Stefánsson, Tait et Smed), nommé pour étudier cette possibilité, présente la proposition suivante qui est adoptée par le Comité Hydrographique:—

"Le sous-comité, estimant qu'une extension du secteur des Cartes Synoptiques pourrait être utile à la fois aux hydrographes et aux biologues, se propose de procéder à une expérience ayant pour objet de se rendre compte s'il est possible d'étendre le secteur couvert par les cartes aux étendues maritimes au nord du 63° de latitude nord et à l'est du 30° de longitude ouest, en s'intéressant plus particulièrement à la Mer de Barentz, aux mers baignant l'Islande et à la zone de pêche comprise entre l'Islande et Jan Mayen. Pour ce faire, le sous-comité compilera les cartes relatives à deux périodes: (a) mai—juin 1958, période riche en données; (b) février 1958, qui offre peu de renseignements. Tous les pays seront priés par M. Smed de faire parvenir leurs données à M. Lee (Fisheries Laboratory, Lowestoft, England) qui préparerait alors une série de cartes et les présenterait à la réunion du Conseil d'octobre 1959".

Le Sous-Comité pour la Préparation de Cartes de Moyenne de Salinité et de Température de Surface (Président: Dr. Dietrich) présente son rapport. La recommandation 2 est adoptée.

Le Sous-Comité pour la Mécanisation du Fichier des Données Hydrologiques du Conseil (Président: Prof. Hela) présente son rapport. Le rapport[1]) est adopté et le Comité félicite le Prof. Hela pour le travail de son Sous-Comité. Les recommandations 3, 4 et 5 sont adoptées.

Après lecture par Cdr. Lumby des Centres Mondiaux de Données Océanographiques de l'AGI (voir ci-dessous, II) le Comité adopte la recommandation 6.

Le Sous-Comité pour l'Etude de la Normalisation des Méthodes de Détermination de la Salinité (Président: M. Hermann) présente son rapport.

Le Dr. Schleicher de Woods Hole Oceanographic Institution et le Dr. Cox, du British National Institute of Oceanography présentent une communication au Comité (voir ci-dessous, II).

Au nom du Comité le Président remercie les Drs. Schleicher et Cox pour leurs communications fort interessantes traitant d'une nouvelle façon d'aborder un problème très important. Il remercie également le Dr. Iselin, W.H.O.I., et le Dr. Deacon, N.I.O., d'avoir permis aux deux orateurs de prendre part à la réunion. Les recommandations 7 et 8 sont adoptées.

Un rapport préliminaire par le Dr. Cooper, sur les Unités de Mesure dans l'Océanographie Chimique est présenté et discuté. Le Président exprime au Dr. Cooper la reconnaissance du Comité et émet le voeu de le voir continuer ses travaux pour présenter un rapport définitif l'année prochaine.

Le Sous-Comité pour l'Année Géophysique Internationale 1957—1958 (Président: Dr. Böhnecke) présente son rapport. Le Sous-Comité, ayant considéré la réalisation du programme de la Campagne de Front Polaire d'Atlantique Nord trouvait que la partie principale du travail était accomplie ou mise à exécution. Le Sous-Comité, par conséquent trouvant que

[1]) Paraîtra dans le *Journal du Conseil*, **25** (1).

sa charge est remplie, a suggéré qu'il soit aboli. Le rapport est approuvé. Les recommandations 9 et 10 sont votées, et le Sous-Comité est aboli.

Le Sous-Comité de Recherche sur la Remontée d'Eau Profonde Sub-Arctique le Long de la Crête d'Islande-Féroé (Président: Dr. TAIT) présente son rapport. La recommandation 11 est adoptée.

Le Sous-Comité de Coordination des Recherches Hydrologiques en Mer Baltique (Président: Prof. HELA) présente son rapport. M. le Prof. Hela ayant exprimé le voeu d'être dégagé de la présidence du Sous-Comité, M. le Prof. Dietrich était élu Président.

Un résumé donnant des indications sur les observations normales effectuées régulièrement dans les pays membres est distribué et adopté.

Les projets de programme de travaux hydrologiques, communiqués par les pays membres pour 1959 sont exposés.

Le Président attire l'attention du Comité sur le plan intitulé "North Sea Tower Plan", envoyé par l'UNESCO au CIEM pour être commenté.

M. VAN DUIJNEN MONTIJN expose le "Memorandum sur les possibilités hydrographiques d'établir une plateforme d'observation dans la Mer du Nord", du Prof. GROEN. Le Comité recommande qu'une telle plateforme, si elle est installée, le soit le plus au nord possible. Il est décidé de présenter une demande de renseignements à l'Angleterre, l'Allemagne, les Etats-Unis et l'URSS, sur leur expérience relative aux plateformes.

Le Dr. BÖHNECKE ayant exprimé le voeu ferme d'abandonner la présidence à la présente réunion, un comité électeur est formé, composé de MM. LEE, DIETRICH, HELA et KULLENBERG. M. LEE déclare que le Comité Hydrographique regrette sincèrement que le Dr. BÖHNECKE ne se trouve pas en mesure de continuer à assurer la présidence et le remercie d'avoir été un conseiller sage et expert pour le Comité Hydrographique durant une période difficile d'expansion mondiale et d'intensification des efforts internationaux dans le domaine de l'océanographie.

Le Comité électeur propose le Dr. TAIT comme nouveau Président. Il est élu à l'unanimité.

Le Dr. BÖHNECKE remercie le Comité Hydrographique pour l'esprit de coopération et pour la bonne volonté dont ses membres ont fait preuve durant son mandat de Président. Il déclare que cette période lui a parue du plus grand intérêt, car il se rend compte de l'importance et du sens attachés au rôle du Comité sur le plan international.

En reprenant la présidence du Comité, le Dr. TAIT se déclare touché de l'honneur qui lui est fait, et affirme qu'il est prêt à suivre, dans la mesure de ses moyens, l'exemple illustre de ses éminents prédécesseurs.

II. Communications

Les rapports suivants sont présentés:—

J. R. LUMBY: "The IGY World Data Centres for Oceanography".

O. H. SÆLEN: "Punched-card treatment of hydrographic observations on the electronic computer IBM 650".

P. GROEN: "Memorandum on the hydrographic possibilities of an observation platform in the North Sea".

K. SCHLEICHER: "The Woods Hole salinometer".

R. A. COX: "The performance of the electrical salinometer and the problem of a suitable reference standard".

Discussion des deux exposés précités: MM. BARNES, PREOBRAZHENSKY, SVANSSON, HERMANN, HELA, BÖHNECKE et MOSBY.

W. KRAUSS: "Our knowledge about internal waves in the northern North Atlantic Ocean".

Discussion: MM. MOSBY, FJELDSTAD, KULLENBERG, LEE, CARRUTHERS et HELA.

E. FØYN: "A new apparatus for measuring oxygen in the sea".

Discussion: M. BARNES.

J. H. STEELE: "Observations of deep-water overflow across the Iceland-Faroe Ridge".

J. N. CARRUTHERS & A. J. LEE: "A note on the use of some types of current meter".

J. N. CARRUTHERS & A. J. LEE: "Current measurements with the 'Pisa' current indicator in the Norwegian and Greenland Seas".

J. B. TAIT: "Bottom current measurements on the Wyville Thomson Ridge by the Carruthers 'Pisa' subsurface current indicator".

J. B. TAIT: "Bottom current measurements between Faroe Bank and the Faroe Islands by the Carruthers 'Pisa' subsurface current indicator".

Discussion des cinq exposés précités: MM. HERMANN, MOSBY, LUMBY, LEE, DIETRICH, CARRUTHERS, HELA, PREOBRAZHENSKY, TAIT.

Dr. CARRUTHERS projette un film court sur un nouveau "totalizing current meter".

H. MOSBY: "The renewal of the deep water layers in the Norwegian Sea".

Discussion: M. LEE.

B. JARAGOV: "Main conclusions from the observations carried out in September 1957 north of Iceland".

Discussion: M. STEFÁNSSON.

A. ALEXEJEV: "The hydrographical conditions in the northern part of the Denmark Strait, August 1957".

Discussion: M. TAIT.

J. FILARSKI: "Hydrographic observations in the North Sea in May 1958".

Discussion: M. DEMEL.

K. ZAGRODZKI: "Temperature and salinity of the southern Baltic waters, August 1957—May 1958".

Discussion: MM. KULLENBERG et DEMEL.

K. ZAGRODZKI: "State Institute for Hydrology and Meteorology, Oceanographic Department, Gdynia".

K. P. SHIROKOV: "Temperature and salinity in the Baltic Sea in May—November 1957".

Discussion: MM. DEMEL et CARRUTHERS.

I. M. SOSKIN: "Hydrological conditions of the Baltic Sea and solar activity".

Discussion: MM. HELA et CARRUTHERS.

M. Picotti: "Recherches océanographiques dans l'Adriatique en 1955". Discussion: MM. Kullenberg, Desbrosses, Wimpenny et Demel.

V. Fedosov & K. Spichak: "Hydrochemical research in the area from the Azores to the Gulf of Guinea in the spring and autumn 1957 with the R/V 'Kazan' ". Discussion: M. Lee.

K. P. Andersen: "The climatic changes in the North Sea 1897—1939 in the light of the observations from the Danish lightvessel 'Horns Rev' ". Discussion: M. Carruthers.

III. Recommandations

1. Le Comité Hydrographique recommande d'annuler les cartes des vents publiées avec les Cartes Hydrographiques Synoptiques, puisque MM. Dietrich, Carruthers et autres continueront la publication des Conditions des Vents Marins autour de la Grande Bretagne au cours de la période 1900—1949.
2. Considérant le rapport sur la réunion de Hambourg du 24—25 juin 1958, du Sous-Comité pour la Préparation des Cartes de Moyennes pour les Températures et Salinités de Surface, et sur l'état d'avancement des travaux de ce Sous-Comité au cours de l'année, et notant avec satisfaction l'aide appréciable dont le Sous-Comité a bénéficié de la part d'un certain nombre d'organisations, le Comité Hydrographique recommande que le Sous-Comité poursuive ses travaux.
3. Le Comité Hydrographique, se référant au rapport présenté par le Sous-Comité pour la Mécanisation du Fichier des Données Hydrologiques du Conseil, et après une étude approfondie des conditions dans lesquelles fonctionne actuellement le Service Hydrographique et des conséquences de l'augmentation constante du volume de données qui font l'objet des travaux du Service Hydrographique, est persuadé que ce problème ne peut être résolu que par la mécanisation immédiate de l'Index, et recommande que cette mécanisation soit entreprise. La dépense prévue pour cette opération pour l'année fiscale 1958—1959 se monte à 15.650 c. d.
4. Le Comité Hydrographique recommande:—
   (a) que le Conseil adopte le projet de fiches hydrographiques perforées, présenté dans le rapport du Sous-Comité pour la Mécanisation du Fichier des Données Hydrographiques du Conseil;
   (b) que les institutions et organisations intéressées soient informées de la décision du Conseil d'adopter le projet mentionné ci-dessus.
5. Le Comité Hydrographique, considérant que le Service Hydrographique du CIEM devra encore avoir recours à l'assistance du Sous-Comité pour la Mécanisation du Fichier des Données Hydrologiques du Conseil lorsqu'il s'agira de mettre en pratique le système hydrographique IBM et d'appliquer l'utilisation des fiches IBM à la préparation du *Bulletin Hydrographique*, recommande que le Sous-Comité poursuive ses travaux d'après le mandat ci-dessus.
6. Le Comité Hydrographique a écouté avec intérêt un compte-rendu sur les Centres Mondiaux de Données Océanographiques de l'AGI et estime que l'établissement de Centres Permanents de Données Océanographiques serait très utile.
7. Le Comité Hydrographique, considérant les progrès dus à MM. Schleicher, Bradshaw et Cox dans la détermination de la salinité au moyen de mesures de la conductivité électrique, progrès qui sont de la plus grande importance dans le domaine de l'océanographie, recommande:—
   (a) que soient entreprises de nouvelles recherches pour la préparation de standard de conductivité satisfaisant, par le Service des Standards de l'Eau de Mer de l'AIOP en collaboration avec le Sous-Comité pour l'Étude des Méthodes Standard de Détermination de la Salinité;
   (b) que le Conseil accorde pour ces travaux, qui entraîneront forcément quelques dépenses, une subvention de c. d. 1000, ce qui semble suffisant.
8. Tenant compte de la nécessité d'entreprendre de nouvelles recherches sur la méthode de la conductivité électrique pour la détermination de la salinité, le Comité Hydrographique recommande que le Dr. R. A. Cox soit nommé membre du Sous-Comité pour l'Étude des Méthodes Standard de Détermination de la Salinité.
9. Le Comité Hydrographique recommande:—
   (a) qu'à la fin de 1958, le Service Hydrographique prépare et publie une liste et une carte indiquant les recherches effectuées dans le cadre de l'Étude du Front Polaire de l'Atlantique Nord;
   (b) que les données recueillies au titre du projet ci-dessus soient envoyées aussitôt que possible au Service Hydrographique.
10. Le Comité Hydrographique recommande qu'une Réunion Spéciale, chargée de discuter des résultats de l'Etude du Front Polaire de l'Atlantique Nord, soit tenue à une date proche de celle de la réunion du Conseil de 1959; cette réunion spéciale serait convoquée par le Dr. J. B. Tait, le rapporteur hydrographe serait M. A. J. Lee, et un membre désigné par les autres comités intéressés, rapporteur biologiste.
11. Le Comité Hydrographique recommande que les recherches menées par plusieurs navires dans la région de la crête Islande-Féroé, prévues pour le mois de juin 1959, soient reportées à juin 1960, afin
    (a) d'accorder plus de temps pour le perfectionnement des différents systémes d'enregistrement mécanique ou servo-mécanique actuellement sous préparation, et
    (b) de tirer le maximum de profit des résultats des travaux de l'AGI.
    Le Comité recommande également que soient poursuivies ou reprises en 1959 les études très intéressantes exposées dans des communications présentées à la réunion de 1958 par MM. Steele, Tait, Carruthers et Lee.

Comité du Plancton

Président: Prof. E. Steemann Nielsen

I. Compte-rendu

La liste des membres est vérifiée. Les rapports sur les travaux effectués en 1957 sont adoptés. Un rapport par le Dr. Fraser sur l'avancement de la publication des *Fiches d'Identification du Zooplancton* est présenté. Il est décidé que le Président écrira au Dr. Fraser pour le remercier de ses remarquables travaux.

Le Comité discute d'une réunion spéciale sur le zooplancton pour 1960. Il est décidé de désigner un groupe de travail réduit — le Président, le Dr. Fraser et le Prof. Thorson — chargé d'élaborer un programme pour cette réunion.

L'Agence Centrale pour la détermination du C-14 est officiellement ouverte.

Il est décidé de recommander au Comité Consultatif de prévoir une session biologique au cours du symposium qui devrait avoir lieu en 1959 sur les données de l'AGI.

Les membres du Comité du Plancton discutent de la nécessité de bénéficier des avis d'hydrographes et conviennent de soumettre une recommandation au Comité Consultatif.

Le Dr. Cole fait part des progrès dans la préparation de monographies sur les flagellés.

Le Prof. E. Steemann Nielsen est réélu Président.

II. Communications

J. H. Fraser: "Scottish plankton investigations in Icelandic waters".

E. Steemann Nielsen: "The pattern of productivity at high latitudes near fronts".

Grim Berge: "Plankton work in the Norwegian Sea in 1958".

J. Krey: "Plankton work by the German ships in the North Atlantic during the IGY".

III. Recommandations

1. Le Comité du Plancton estime que les conseils d'hydrographes lui sont nécessaires au cours de ses réunions, et souhaite à l'avenir en bénéficier.

2. Le Comité du Plancton recommande avec insistance que l'on organise une session biologique spéciale, au cas où il serait décidé de tenir un symposium sur les données de l'AGI au cours de la réunion de 1959.

Comité Statistique

Président: Dr. J. Lundbeck

I. Compte-rendu

Le *Bulletin Statistique* pour 1956 est présenté et le Comité discute de plusieurs améliorations mineures à apporter aux futures publications. Les écarts entre les données statistiques relatives à l'Atlantique Ouest dans les rapports du CIEM et de l'ICNAF seront résolus par les bureaux de ces deux organisations. Le Comité félicite le Secrétaire Général pour la publication, depuis la dernière réunion du Conseil, de cinq numéros (nos. 2—6) des *Statistical News Letters*.

Le Dr. J. Lundbeck est réélu Président.

II. Recommandation

La Commission Permanente et le Comité de Liaison ayant de plus en plus recours au *Bulletin Statistique* pour évaluer les stocks de poissons exploités, le Comité Statistique recommande, que le Secrétaire Général se rende dans les pays qui ont tardé à fournir des statistiques satisfaisantes, dans le but d'accélérer et d'améliorer la présentation de ces statistiques par le Conseil.

2ÈME PARTIE

RAPPORT ADMINISTRATIF

REPORT

of

ADMINISTRATION FOR THE YEAR ENDING OCTOBER 31st 1958

I. General

Composition of the International Council

Delegates

Denmark has appointed Dr. phil. PAUL M. HANSEN as a Delegate.

U.S.S.R. has appointed Dr. J. J. MARTY as a Delegate instead of Professor M. A. SVETOVIDOV.

Germany has, this year, appointed Professor A. BÜCKMANN as third Delegate.

Composition of the Bureau

After the death, on 26. September 1958, of the Council's President, Dr. Å. VEDEL TÅNING, the Bureau now consists of the following members:— Dr. J. FURNESTIN, France, President; Mr. G. ROLLEFSEN, Norway, First Vice-President; Mr. A. J. AGLEN, Scotland, Dr. J. HULT, Sweden, and Dr. E. LELOUP, Belgium, Vice-Presidents.

Committees and Editors

At the 46th Council Meeting, September—October 1958, Dr. E. LELOUP succeeded Dr. FURNESTIN as Chairman of the Atlantic Committee and Mr. B. B. PARRISH, Scotland, was elected Chairman of the Herring Committee, succeeding Mr. O. AASEN, Norway. Furthermore, Dr. J. B. TAIT succeeded Dr. G. BÖNECKE as Chairman of the Hydrographical Committee.

No changes took place in the editorship of the Council's publications.

Meetings

A meeting of the Bureau took place in Copenhagen on 29. April, and was attended by all members and the Chairman of the Consultative Committee.

Mr. OLAV AASEN, Mr. J. A. GULLAND (Lowestoft), and Mr. K. P. ANDERSEN (Denmark) met in Copenhagen in December 1957 for the purpose of working up the results of the 1957 Herring Tagging Experiment, i. e., to judge the size and taxation of the stock of herring on the Bløden Ground. A report was prepared and submitted to all concerned.

The Herring Tagging Experiment on the Bløden Ground was continued and completed in August 1958. All the countries, which had participated in 1957 participated again in 1958.

On 11. February 1958, the Secretary General held a meeting in Lysekil, Sweden, with Mr. OLAV AASEN and Dr. H. HÖGLUND in order to plan the work, based on the experience from 1957, and a report was prepared and submitted to the Working Group. Another meeting, convened by the Secretary General, took place in Esbjerg, Denmark, on 5. August prior to the start of the taggings. The meeting was attended by all the scientists who carried out the taggings.

Mr. OLAV AASEN, Dr. E. BERTELSEN, and Dr. H. HÖGLUND met in Copenhagen prior to the 46th annual meeting in order to prepare a short report on the taggings carried out, to be laid before the Herring Committee.

The correspondence with the Director of the Danish Foreign Office, Ambassador N. SVENNINGSEN, has been continued. The Committee has held two meetings in Copenhagen, the first on 20. November 1957, when the problem was discussed with Mr. SVENNINGSEN, and the second on 3. to 5. September 1958, when the members were received by His Excellency, Mr. H. C. HANSEN, the Danish Prime Minister and Minister for Foreign Affairs.

A Sub-Committee meeting "on the Preparation of Mean Charts" was held in Hamburg on 24. and 25. June and was attended by Dr. G. DIETRICH, Germany (Chairman), Professor P. GROEN, the Netherlands, Mr. H. W. HILL, England, and Mr. J. SMED.

A Sub-Committee meeting "for the Mechanization of Hydrographic Data Index" was held in Hamburg on 26. and 27. June, and was attended by Professor I. HELA, Finland (Chairman), Professor G. DIETRICH, Germany, Mr. L. MIDTTUN, Norway, Mr. J. A. VAN DUIJNEN MONTIJN, the Netherlands, and Mr. J. SMED. Mr. H. W. HILL, England, was present as Observer.

On 2. July 1958 the Chairman of the Liaison Committee, Dr. A. E. J. WENT, had the opportunity to hold a meeting in The Hague, in order to discuss matters relating to the Liaison Committee and the co-opted members. The meeting was attended by Mr. G. ROLLEFSEN, Dr. P. KORRINGA, Mr. R. J. H. BEVERTON, Mr. L. K. BOEREMA, the Secretary of the Permanent Commission, and the Secretary General of ICES.

II. Central Office

Staff

The Bureau agreed to the appointment of Miss M. GOODMAN, as temporary clerical assistant from 1. January 1958; Mrs. M. LARVIG was appointed assistant in the Publication Department as from 1. March 1958.

Publications

Rapports et Procès-Verbaux, Vol. **143**, Pt. II, March 1958 (Herring "Races").
— Vol. **144**, April 1958 (Contributions to Plankton Symposium 1957).
— Vol. **145**, August 1958 (Proc.-Verb. 1957, Admin. Rep. 1956).
Journal du Conseil, Vol. **23** (2), issued in April 1958; (3), issued in July 1958.
Vol. **24** (1), in preparation.
Annales Biologiques, Vol. XIII, issued in March 1958.
— Vol. XIV, in preparation.
Zooplankton Sheets, Nos. 71—80, ready for publication.
— Nos. 81 —, in preparation.
Bulletin Statistique, Vol. XLI for 1956, issued August 1958.
— Vol. XLII for 1957, in preparation.
Statistical News Letters, Nos. 2—6 have been distributed during the year.
Bulletin Hydrographique for 1954, to be issued early in 1959.
— for 1955, in preparation.
Hydrographic Synoptic Charts for April—October 1957 have appeared.

Income and Expenditure Account for the Financial Year $^{1}/_{11}$ 1957—$^{31}/_{10}$ 1958

EXPENDITURE

I. Incidentals	D. kr.	D. kr.
President	5,000.00	
Chairmen of Committees	22,500.00	27,500.00
II. Salaries		
General Secretary	27,176.69	
Administrative Department:—		
Assistant Secretary	17,577.90	
Assistant	13,068.70	
Publication Department:—		
Assistant Secretary	17,577.90	
Assistant	12,631.08	
Statistical Department:—		
Assistant Secretary	16,696.40	
Hydrographical Department:—		
Hydrographer	26,357.55	
1st Assistant	16,440.90	
Clerical Assistant	9,848.12	
Part-Time Assistant	5,803.60	
Part-Time Assistant	4,697.41	
Incidental Assistance	6,787.66	174,663.91
III. Office Expenses		
Rent, Light, and Heating	10,889.16	
Stationery	5,646.51	
Postage, Telephone, etc.	4,680.54	
Furniture	548.73	
Insurance	1,038.00	
Upkeep – Cleaning	5,327.88	
Miscellaneous	3,795.05	
Expenditure in connexion with Council Meeting	6,487.36	38,413.23
IV. Travelling Expenses		17,020.01
V. Publications		
Printing	85,130.41	
Translation	695.86	
Distribution	2,807.28	
Honoraria for reviews in J. de Cons.	790.00	
Editor of *Journal du Conseil*	4,598.55	
Editor Assistant	2,000.00	
Editor of Plankton Sheets	1,000.00	97,022.10
VI. Pensions		
Miss I. Hansted	7,800.00	
Miss E. Brønniche	9,804.00	
Miss M. Rehder	9,804.00	
Contribution, Pension Insurance and Pension Saving	9,587.99	36,995.89
Extraordinary Expenditure (Mrs. Tåning)		3,000.00
Unexpended Vote carried to Creditors		32,295.00
Excess of Income over Expenditure		18,919.82
		445,830.06

RECEIPTS

I. Contributions	D. kr.	D. kr.
Belgium	20,000.00	
Denmark	20,000.00	
Finland	10,000.00	
France	40,000.00	
German Federal Republic	40,000.00	
Iceland	20,000.00	
Ireland	15,000.00	
Italy	30,000.00	
Netherlands	20,000.00	
Norway	20,000.00	
Poland	20,000,00	
Portugal	15,000.00	
Spain	20,000.00	
Sweden	20,000.00	
United Kingdom	40,000.00	
U. S. S. R.	40,000.00	390,000.00
II. Interests		
on Bank Deposits	12,477.32	
on Investment Reserve Fund	4,711.50	
on Pension Fund	4,873.50	22,062.32
III. Sale of Publications		32,406.60
IV. Contribution from Woods Hole Oceanographic Institution and A. & M. College of Texas towards collecting and publishing American observations in *Bulletin Hydrographique*		1,361.14
		445,830.06

Balance Sheet 31st October 1958

LIABILITIES	D. kr.	D. kr.
Capital Reserve Fund		
Capital Reserve Fund as per 1/11 1957	163,451.55	
Excess of Income over Expenditure	18,919.82	
Difference in exchange	25,638.13	208,009.50
Pension Fund		106,564.16
Creditors		
Contributions for 1958/59 prepaid	184,984.24	
Chairmen Incidentals	610.13	
Sale of Series of Publications from Library	6,186.04	
Hydrographical Punch Cards (Deutsches Hydr. Inst.)	5,000.00	
Unexpended vote	32,295.00	229,075.41
		543,649.07

ASSETS	D. kr.	D. kr.
Cash at Sparekassen	355,480.07	
Cash at Post Office	177.35	
Cash on hand	364.74	356,022.16
Bonds		
$4^1/_2$ % Danish State Bonds redeemable in 1997, nominal value kr. 213,600.00 at cost 170,955.56, market value 31/10 1958, $87^3/_4$ %		187,434.00
Debtor, offprints		192.91
		543,649.07

Á. Friðriksson,
General Secretary

Else Hedegaard

I have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. I have verified the existence of the cash on hand and at bankers as well as of the Treasury Bonds.

Copenhagen, December 17th 1958.

(sign.) Karl Sørensen,
Statsautoriseret Revisor
(State-authorized Accountant)

We have scrutinized the foregoing Accounts and Balance Sheet and are satisfied that they are correct.

J. Furnestin

B. Dinesen — Poul M. Hansen — A. J. Aglen

D. Olafsson — G. J. Lienesch — H. Vilela

REPORTS

of

AREA AND OTHER COMMITTEES

Distant Northern Seas Committee

1957

By Jón Jónsson

Denmark

(P. M. Hansen)

Work at Sea

Offshore Work. The "Dana" operated in West Greenland waters from 7. July to 10. August. The "Adolf Jensen" worked occasionally on the banks in April/June.

Coastal Waters and the Fjords. The "Adolf Jensen" operated throughout the year in the area between about 60° N to about 67° N on the west coast of Greenland and from 60° N to 66° N on the east coast of Greenland.

The "Immanuel" worked from about 60° N to about 72° N on the west coast of Greenland.

The "Tornaq" has worked during the summer in the Sukkertoppen and Godthåb districts.

In the field laboratory at Godthåb part of the material collected by the "Adolf Jensen" and the "Tornaq" has been examined.

Work on Fish

Salmon and Char. Electro-fishing has been carried out in different rivers in the Sukkertoppen and Godthåb districts for stock analyses. Samples of scales and otoliths of char have been collected for age analyses and growth investigations.

Stomach content has been collected from small salmon and char for investigation of food competition between the two species.

Tagging experiments on salmon and char have been performed.

In April salmon eggs from northern Norway were released in a river in the Godthåb district.

Spotted and Striped Wolffish (*Anarhichas minor* and *A. lupus*). Distribution of larvae. Fishing experiments with long lines. Collections of otoliths, together with length measurements for studies of stock composition and growth. 104 spotted and striped wolffish were tagged with ebonite disks.

Greenland Halibut (*Reinhardtius hippoglossoides*). Distribution of larvae. Length measurements of Greenland halibut caught in shrimp trawl. Tagging experiments.

Halibut (*Hippoglossus hippoglossus*). Sampling of otoliths, together with length measurements.

Redfish. Distribution of larvae. Length in relation to weight. Sampling of otoliths. 27 redfish have been tagged in the Godthåb Fjord.

Finland

(Ilmo Hela)

See the report of the Hydrographical Committee.

Germany

(Adolf Kotthaus)

Work at Sea

In 1957 the following cruises with "Anton Dohrn" were made in Distant Northern Seas:—

Cruise 1 (20.II.—13.III.) was made to Haltenbank, Svinøy, and Otter Bank (Dr. U. Schmidt in charge). Special investigations on the spawning stock of *Pollachius virens* in connexion with hydrographical observations. Measurements and otoliths from other commercial fish species. 52 trawl hauls and 41 quantitative vertical hauls with the "Helgoländer Larvennetz" were made. 54 hydrographic stations were worked.

Cruise 2 (27.III.—26.IV.) was to the western coasts of Iceland, the Iceland-Greenland Ridge, the east

coast of Greenland, and the Irminger Sea (Dr. A. Kotthaus in charge). Special investigations on the different *Sebastes* types (length, age, maturity, food, sex ratio, occurrence of the different types, rearing experiments with redfish fry, distribution of redfish post-larvae in the Irminger Sea) in connexion with hydrographic observations. Redfish marking experiments. 47 trawl hauls, partly with a covered cod-end, and 19 quantitative vertical hauls with the fry net. 163 redfish were marked. Qualitative and quantitative investigations on the bottom fauna of the redfish feeding grounds (nine samples with the van Veen grab). Nine hydrographic sections were worked, together with hydrographic observations at the trawl stations.

Cruise 3 (1.—30.VIII.) was to western Greenland (Prof. Dr. A. v. Brandt in charge). Fisheries technology and net experiments (selectivity of different cod-ends, measuring meshes, experiments for taking over floating catches in separated cod-ends).

Cruise 4 (14.XI.—13.XII.) was to the Lofoten area (Dr. U. Schmidt in charge). Special investigations on *Pollachius virens* (age, length, growth, maturity, diurnal migration) in connexion with hydrographic observations. Measurements and otoliths from other commercial fish species, specially *Gadus callarias* and *Sebastes*. 60 trawl hauls were made; 78 hydrographic stations on three profiles.

Cruises Nos. 1, 2, and 4 together provided the following material for fish other than gadoid fish:—

	Length measurements	Otoliths	Maturity determinations
Sebastes, all types	3,336	618	2,262
Sebastes viviparus	10	—	10
Argentina silus	161	57	—
Anarhichas lupus	33	—	28
Anarhichas minor	42	—	42
Anarhichas denticulatus	10	—	6
Hippoglossus hippoglossus	14	14	14
Reinhardtius hippoglossoides	85	19	34
Hippoglossoides platessoides	130	—	—
Other species	2,213	241	221
Total	6,034	949	2,617

Members of the following institutions took part in the work at sea:—

Bundesforschungsanstalt für Fischerei:
Biologische Anstalt Helgoland,
Institut für Seefischerei,
Institut für Netz- und Materialforschung.
Deutsches Hydrographisches Institut, Hamburg.
Institut für Vegetative Physiologie der Universität Frankfurt/Main.
International Meteorological Institute, Stockholm.

Market Investigations

At the Bremerhaven and Hamburg-Altona fish markets besides gadoid fish only redfish were sampled from the Distant Northern Seas area:—

	Length measurements		Otoliths	
	Number	Number of samples	Number	Number of samples
Greenland, S and W coast	4,665	14	1,217	8
Greenland, E coast (incl. Dohrn Bank)	8,187	24	2,177	15
Icelandic waters	10,262	39	3,726	28
"Rosengarten"	2,565	8	1,027	9
Faroese waters	2,897	13	942	8
Norwegian coasts	4,903	21	1,317	10
Barents Sea	657	3	320	3
Bear Island region	8,398	29	2,265	12
Total	42,534	151	12,991	93

In general, the redfish were separated according to sex and—as far as possible—to types.

Starting with August 1957, an attempt was made to estimate the proportion of the different redfish types in the catches landed at the Bremerhaven fish market.

Iceland

(Jón Jónsson)

Work at Sea

The research vessel "María Júlía" made three cruises during the year in the months February/March, May, and July/August. The main purpose of these cruises was a general survey of the most important demersal species with regard to population studies. Extensive tagging experiments were carried out on cod, haddock, and plaice.

The research vessel "Ægir" was engaged in hydrographic and planktonic work and a general survey of the herring distribution around Iceland in the periods 10. to 30. April, 28. May to 10. September, and 11. to 17. November. The investigations from 28. May to 24. June were carried out in co-operation with the research vessels "Dana", "G. O. Sars", and "Professor Mesjatsev". In order to have a discussion of the results obtained these four vessels met in Seydisfjord.

A chartered motor-boat "Auðbjörg" carried out herring tagging with external tags during the months July and August off the north, east, and south-west coasts of Iceland.

The trawlers "Brimnes" and "Egill Skallagrímsson" were chartered for three cruises, mainly in the East Greenland area, in the periods 15. May to 1. June, 19. June to 4. July, and 5. to 17. September respectively. The main purpose of these cruises was the detection of new fishing banks for redfish and a general biological investigation on this species.

Work on Fish

Plaice. Samples of the stock of plaice were taken all around the coast with the research vessel "María Júlía". 3,658 specimens were examined with regard to age, length, and sex and 9,145 were measured. 4,600 plaice were marked at various places around the coast.

Halibut. 291 halibut were examined with regard to age, length, and sex.

Lemon Sole. 1,656 fish were measured.

Long Rough Dab. 144 specimens were examined with regard to age, length, and sex and 5,560 were measured.

Witch. 118 specimens were examined with regard to age, length, and sex.

Redfish. A total of 4,420 redfish were examined with regard to age, length, and sex; 23,132 with regard to sex only, and 24,745 fish were measured.

In the autumn of 1956 an attempt was made to mark redfish with loose hooks off the west coast of Iceland and in May 1957 this method was again tried with some improvement. So far no recaptures have been made.

Ireland

(A. E. J. Went)

No work has been done in this country during 1957 on the subject matters covered by the Distant Northern Seas Committee.

Norway

(Birger Rasmussen)

As regards the investigations in 1957 on gadoid fish, herring, hydrography, and plankton, see the special committees. Of other research work carried out in the area the following may be mentioned.

Halibut. Biological sampling and marking experiments were carried out on two cruises to northern Norway and the Barents Sea. Tagging of halibut was also performed in the Davis Strait where 79 specimens were tagged in an area extending from West Greenland to Baffins Land—Labrador and Grand Banks.

Redfish. The work has been continued on the general problem of age determination of redfish by means of the otoliths. Sampling has been made on the cruises with the "G. O. Sars" to the Barents Sea as well as by shrimp trawlers in northern Norway.

United Kingdom

I. England

(G. C. Trout)

The "Ernest Holt" made six cruises to the Barents Sea during the year and continued routine plankton and hydrographic observations. Echo-sounding studies were extended and use was made of underwater photography for the identification of pelagic traces. Observations on redfish were begun, notably the collection of otoliths and the preservation of juveniles of the three types.

II. Scotland

(B. B. Rae)

Scottish research vessels made eight voyages into Distant Northern Seas during 1957.

Hydrographic and planktonic observations were carried out along the usual lines from the Butt of Lewis to Faroe Bank and from Faroe to North Shetland on four occasions—19. to 27. February, 12. to 27. June, 3. to 23. September, and 28. November to 19. December.

Iceland was circumnavigated on three occasions—29. March to 15. May, 25. June to 26. July, and 1. September to 7. October. On each Icelandic cruise the programme included hydrographic and plankton investigations in addition to an extensive series of trawl hauls.

Two cruises were made to the Faroe Islands in January and December for experimental work on nets and mesh sizes.

The sampling of haddock and chicken halibut from Faroese grounds was continued on commercial catches landed at Aberdeen.

The results of these investigations will be reported in Ann. Biol., **13** and elsewhere.

U.S.S.R.

Work at Sea

Experimental fishing for demersal fish was undertaken during 44 cruises with the R/V "Persei 2" (9 cruises) and survey trawlers (30 cruises in the Barents Sea and 5 cruises of 45—90 days' duration in other areas; viz., Icelandic waters, Grand Bank, west and east coasts of Greenland). Oceanographic surveys were conducted throughout the year on board the three special hydrological vessels: "A. Otkupshchikov", "Topseda", and "Polyarnik".

Work on Fish

The following material was collected and examined during the year:—

(a) *Measurements*

	Barents Sea	Other areas	Total
Redfish.....	80,887	71,248	152,135
Other species	20,046	1,087	21,133

(b) *Age determinations* (otoliths, scales)

Redfish.....	6,628	2,038	8,666

(c) *Food analyses* Barents Sea—42,325 specimens, other areas — 5,043 specimens.

(d) *Fish tagged* 14,470 in the Barents Sea (mainly cod).

Near Northern Seas Committee

1957

By P. Korringa

Reports of work carried out have been received from Belgium, Denmark, England, France, Germany, Netherlands, Poland, Scotland, and Sweden. Ireland has reported that no work has been done on the subject matters covered by the Near Northern Seas Committee.

Belgium

(E. Leloup)

Study of the Marine Fauna

Observations were made on the invertebrate fauna of the Belgian coastal waters, in order to determine the population density of the different species, as well as their seasonal numerical fluctuations. These observations were carried out regularly at different points of the Belgian coast.

For all other topics studied by Belgium, see the various subject committees.

Denmark

(E. Bertelsen)

Work at Sea

North Sea. The R/V "Dana" worked in the North Sea from 13. April to 26. May, and from 21. August to 4. October. In continuation of the extensive whiting programme, commenced in 1956, the whole grid of trawling stations covering the North Sea and Skagerak was operated on each of two cruises. In connexion with this work about 3,300 whiting were tagged, and numerous data on other demersal fish species and herring were collected.

Hydrographical data, as well as samples of plankton and larval fishes were collected on a regular basis during the cruises. About 600 plaice were tagged in the central North Sea in April and May.

The whiting investigations were assisted by the "Jens Væver" in August and by a hired cutter "Gurli" in January and February. Furthermore the "Jens Væver" assisted the international herring tagging programme in the Bløden Ground area in July and August and carried out the survey of the stock of young plaice in the Horns Reef area at the beginning of July.

Quantitative fishing for young plaice in the Waddensea took place in June, August, and October.

Skagerak and Kattegat. Besides the above mentioned whiting investigations carried out by the "Dana", "Jens Væver", and "Gurli" in Skagerak and Kattegat the "Biologen" worked in the area from February to November. The ring-net, the Hensen net, and sometimes also the Clarke Bumpus plankton sampler, were used for collecting eggs, fish larvae, and other plankton in the spring and autumn. Quantitative hauls with the standard trawl were made from April to November.

With the M/S "Havkatten" the quantity of young flatfish in the coastal waters has been estimated in July/September, using the Johansen young-plaice trawl. The same vessel has been used for carrying out quantitative investigations on the stock of demersal fish in the Isefjord and the Limfjord.

Motor-boats and row-boats were used for investigations in certain coastal areas proposed to be reclaimed for agricultural purposes.

Market measurements of plaice were carried out at Skagen and at Grenaa.

Work on Fish

Plaice and other Flatfish. Quantitative studies on the stock of young plaice in the Waddensea and in the Horns Reef area were undertaken as in previous years. Market measurements were made at Esbjerg on five occasions during the year. The size composition of plaice from 219 cutter landings has been ascertained, and age determinations were made by analysing some 3,000 otoliths.

Sand-eel. During the year 1957 several samples of sand-eel, collected by research vessels and taken from commercial landings, were analysed for meristic characters, age, length, etc., and market measurements were taken on a regular basis.

Whiting, see Gadoid Fish Committee.

England and Wales

(R. S. Wimpenny)

Work at Sea

The "Sir Lancelot" made sixteen cruises in the Committee's area and the "Platessa" thirteen. Nine cruises of the "Platessa" and five of the "Sir Lancelot", mainly in the first half of the year, were concerned with experiments connected with plaice transplantation. Tagging gadoids was undertaken on three cruises of the "Sir Lancelot" in the summer and autumn and on two cruises of the "Platessa" in the summer and two in the winter. The latter were devoted to Irish Sea whiting and one in August was mainly for hake caught off the south of Ireland. In addition to this the "Sir Lancelot" made one summer cruise tagging soles in the North Sea, one cruise in June, and one in October surveying the plankton of the east coast

herring grounds. During the course of these cruises the Flamborough Line stations were made each month between April and September and an inter-ship comparison was made between the fishing power of the "Sir Lancelot" as a trawler and the "Platessa" as a seiner.

The M. F. V. "Onaway" was used for sole marking in the Southern Bight for one cruise.

Work on Fish Species

General. As a result of the great increase in sampling on English and Welsh fish markets in 1956, an annual publication called the "Fish Stock Record" was published in 1957. This gave substantial measurement data on eight species of fish and it was possible to offer some comment on the state of some of the more important stocks. It is thought that this will support the *Statistical News Letters*, issued by the Council. Of work relevant to the Council's programme, that relating to the effect of gear and meshes may be mentioned. A theoretical examination of the problem has shown that there is an error in trawl catch assessments due to the larger fish escaping from the mouth of the net and that this will tend to underestimate the gain to be expected from conservation methods. Covered cod-end experiments showed that 90 % which escape through the cod-end do so through the last quarter. It is here, therefore, where mesh measurements should be taken.

Whiting. The problems presented to the Permanent Commission by the enforcement of size and mesh regulations in the whiting, was the cause of investigations into the status of the stock and individual size distribution. At Brixham it was found that the smaller whiting found near the shore were not of a smaller race than those found further offshore thus dispelling the contention of some local fishermen.

In the Irish Sea off the NE coast of Ireland successful marking experiments showed that the fishing rate here was substantial and that size in the same fishery could vary much from one year to another. Over 7,000 whiting were measured from Irish Sea ports and over 12,000 at Brixham. Trawl-caught and seine-caught whiting from the North Sea were measured separately, they amounted to 25,105 and 4,389 respectively.

Plaice. The investigation into the plaice spawning grounds in the southern North Sea showed that the main production of the planktonic food for larval plaice was on the eastern side of the Southern Bight in clearer water. The I-group taken on the nursery grounds of Bridlington Bay in June was of about average strength.

Trawling for plaice on the Dogger Bank during the summer after having established the location of patches of plaice food (e. g., *Mactra*) showed no tendency for marked fish to stay or aggregate on these patches. Plaice transplanted from the coastal ground to the Dogger Bank showed an increase in growth-rate similar to that in all such experiments in the port. Both in sea experiments and in a tank ashore it appeared that a rocking motion was harmful to the fish.

Over 127,000 length measurements of trawler-caught plaice from the North Sea were taken at Grimsby and Lowestoft where 3,600 otolith samples were collected. A further sample of nearly 10,000 measurements were also taken from seine-caught fish from the North Sea landed at Grimsby.

Sole. The results of marking experiments on this species indicate that in a locality close to the English coast the population may be local, as fish marked there in 1955 continue to be returned from the same locality. Those marked in the middle of the southern North Sea seemed to move about more.

Over 45,000 length measurements were taken at Lowestoft and Grimsby from North Sea catches and 205 otolith collections were made at Lowestoft. Length measurements were also made using Irish Sea landings at Milford Haven and Fleetwood. They amounted to 4,293.

France

(Institut des Pêches)

Le navire océanographique "Président-Théodore-Tissier" a procédé à des sections hydrologiques en Manche orientale et au sud de la Mer du Nord (banc du Sandettié) en novembre 1957.

Le garde-pêche "Ailette", de la Marine Nationale a effectué des observations hydrologiques en Mer d'Irlande, en Manche, Mer du Nord et Baltique.

Germany

(G. Hempel)

Work at Sea

The R/V "Anton Dohrn" worked four times in the North Sea, viz., from 14. January to 8. February in the north-eastern part of the area, and in the middle of May, from 26. June to 5. July, and from 7. September to 5. October in the southern and central North Sea. The winter cruise was mainly devoted to investigations on the stocks of herring and haddock and to taking samples of the bottom fauna. In the June/July trip trawl hauls were made, together with bottom investigations and Hensen-net fishing. During the same cruise comparative fishing was carried out by the "Anton Dohrn" and the R/V "Uthörn". The main object of the cruise in autumn was to take samples of herring and plankton. Hydrographic observations have been made on all cruises. On one line of stations samples of fish larvae were collected in the month of May.

In July, November, and December the "Uthörn" devoted short time cruises to trawling on plaice and dab. Trawl fishery and census of the bottom fauna were carried out at several stations during the routine cruises of the "Uthörn" in May and September. The new R/V "Victor Hensen" of the Institut für Meeresforschung at Bremerhaven, worked in the Weser

estuary and in the German Bight completing 60 cruises. The main objects were the carrying out of hydrographical investigations in the zone of brackish water and the collection of plankton and bottom samples for ecological and micro-biological studies.

Work on Fish

Plaice and Dab. Continuing the 1956 programme, growth and age determinations of the German Bight plaice have been carried out in June/July 1957. In addition, market measurements were made on the landings of the German deep-sea cutters. The age of 24,000 plaice has been ascertained. On dab 12,000 length determinations were carried through. To investigate competition for food, stomach contents of plaice and dab were examined. Trawling at different times of day and night was undertaken in order to study diurnal rhythms in feeding and locomotion.

Sand-eel. The Institut für Küsten- und Binnenfischerei started a programme of investigations on the stock and the biology of the sand-eel. Nine samples (4,000 specimens) were obtained from commercial catches for the determination of length, maturity, racial characters, and condition (fat, water content, and ash). The admixture of undersized protected fish species in the landings of the industrial fishery on oil herring and sand-eel has been examined by analysing 38 samples (23,000 specimens).

Inshore Fishery. At all places of any importance on the German North Sea coast the landings of the shrimp fishery have been examined. 446 samples (4,300 kg) have been taken to study the quantity of protected and unprotected fish contained in the catches.

Netherlands

(L. K. Boerema and M. Roessingh)

Work at Sea

During the year 1957 the research vessel "Willem Beukelsz" operated full time within the Near Northern Seas area. A substantial part of the total number of cruises has been devoted to comparative fishing experiments and to herring investigations. These cruises are referred to in the administrative reports of the committees concerned.

Six cruises, in April and in the period October/November, were carried out for routine trawling along lines from the Dutch coast seaward. Data on plaice, whiting, and sole, and some additional data on other fish species have been collected. Four cruises, in January and February, dealt with special plaice problems, and one cruise in May was made in order to collect whiting samples in the German Bight.

One trip has been made on board a commercial vessel in order to study the industrial fishery for sand-eels.

Work on Fish

General. Length measurements were taken of all commercial fish species caught in the routine trawl hauls. Throughout the year large numbers of whiting and sole, landed at IJmuiden, have been measured, and samples were taken from the market for age determination. Market measuring of plaice started in August.

Plaice. The routine trawling mentioned above yielded information on age, density, and growth of 0 to V-group plaice in the Dutch coastal area.

Samples of spawning plaice collected on the spawning grounds in the Flemish Bight and in the German Bight were used for a comparative study of the meristic characters of these populations.

Again, surface plankton samples were taken every tide from the lightvessel "Texel", from January till April inclusive, to determine the number of plaice eggs in the course of the season of reproduction. During two cruises of the research vessel "Willem Beukelsz" plaice eggs and larvae have been collected in the neighbourhood of this lightvessel, as has been done in previous years. This was done to test the reliability of the sampling from the lightvessel.

Sand-eel. Regularly, sand-eel samples were collected from the industrial fisheries and examined for age, maturity, vertebrae number, and whenever possible, for stomach content. The total catches of these fisheries were frequently inspected to study the relation between sand-eel and other species, both adult and immature. Stomachs of other fish species were collected during the second half of the year from many commercial fishing boats to estimate the importance of the sand-eel as fish food.

Whiting. Whiting was collected during the routine trawling in spring and autumn to study the length and age composition of the stock in the southern North Sea. A special cruise was made to the German Bight to compare the whiting from an area, in which the industrial fisheries operate, with the whiting from the Dutch coastal area.

Poland

(Z. Mulicki)

Measurements of temperature and salinity were made at various depths at 13 stations during the cruise of the M/T "Michal Siedlecki" from 11. to 21. January 1957. Simultaneously, the efficiency of the fishing gear has been studied.

During two cruises of the M/T "Birkut" in the months of June/July, and in September, measurements of water temperature and salinity were made at 40 North Sea stations (southern Fladen Ground, Long Forties, Farne-Deep, and Dogger Bank).

The state of the herring stock was the main object of the ichthyologist's interest. For details, see the Herring Committee.

Observations were carried out to determine the admixture of demersal fish species in the herring catches. A biological analysis of 600 mackerel specimens from the Norwegian Rinne and the southern North Sea has also been performed.

Some time has been devoted to studying the Bryozoa of the North Sea.

Scotland

(H. Wood)

During the year 1957 the Scottish research ships "Explorer", "Scotia", and "Kathleen" made twenty-eight cruises of which twenty were devoted to operations in the northern North Sea and in coastal waters west of Scotland. Some contribution was also made to the observations during the course of eight cruises to the Faroes or Iceland.

A normal programme of hydrographic observations and of plankton sampling was completed. In addition, the collection of samples of phytoplankton for assay of Vitamin B12 and for hormone assays was extended, while in April, work on basic productivity was concentrated in the northern North Sea on the west side of the Norwegian Deep where British herring drifters normally operate during the spring months.

In spring, plankton surveys were made to determine the density and distribution of haddock eggs and larvae in the northern North Sea and of herring larvae in the Firth of Clyde which had their origin on spawning grounds at the mouth of the estuary.

The sampling of the demersal species, more particularly haddock, in the Aberdeen fishmarket, was supplemented by quarterly cruises in the North Sea by the "Explorer", while sampling of seine-net catches has been appreciably extended. Further studies have been made of haddock growth in different regions of North Sea and of haddock movements.

A report of the plaice for the Scottish east coast fishing grounds, sampled between 1910 and 1952 will be puslished soon, and work has begun on a study of the food and feeding habits of cod in the North Sea, and of flatfish other than plaice and lemon sole.

Information has been collected concerning the abundance and distribution of sharks and dog fishes in Scottish waters, while the records of rare species are being maintained.

Studies have been made of the parasite *Grillotia erinaceus* in halibut and considerable progress has been made in the elucidation of the life history of *Lernaeocera* infesting haddock and whiting.

Experiments in pelagic trawling were made in April and observations were made on the effect of different types of rig of small mesh cover over the cod-end with regard to escape from the cod-end.

Numerous tests of both demersal and pelagic fishing gear, using quarter scale models, have been made.

Comparative tests have been made of the fishing efficiency of lobster creels having different sizes of creel eye, while observations have been maintained on the study of *Nephrops* in the Forth Estuary.

Sweden

(J. Hult)

The biological work at sea was directed to experimental trawling for whiting and *Nephrops*, and to studies of the herring spawning in March along the eastern Skagerak coast. The "Skagerak" made a cruise to the eastern and southern North Sea from the middle of March to the middle of April. The "Eystrasalt" made shorter cruises in the Skagerak in January (whiting research), in March and April (herring and herring tagging), and in November and December (whiting investigations).

U.S.S.R.

(N. P. Birjukov)

Four cruises were made in the North Sea in the year 1957. During the first one, in March and April, the area between 58° N and 61° N was surveyed. The western slopes of the Norwegian Rinne were carefully investigated. Two echo-surveys were undertaken to define the distribution of the herring.

The second cruise in the North Sea was undertaken in June and July. The survey of the Norwegian Rinne and its western slopes was repeated from 17. to 21. June and from 5. to 7. July. From 21. June to 3. July echo-sounding surveys were carried out in the Fladen Ground area. This work was continued from 8. to 15. July in the Gut and Devils Hole areas, and over the northern slope of Dogger Bank.

The third cruise was undertaken in September and October in the Dogger Bank area and further southwards. During this period four echo-soundings were repeatedly made every 10 days in the places with the densest herring concentrations, this accompanied by survey trawlings. At the same time plankton samples were collected, temperature and salinity measured in different water layers, and other hydrographic conditions were observed.

The southern part of the North Sea was visited during the fourth cruise in the month of December.

The 1957 work covered the collection of 582 plankton samples from 133 stations, the working of 226 hydrographical stations, further 77 experimental trawlings, and six driftings. (In total 2,385 herrings were used for age determinations of which 1,373 were taken for racial studies, whereas the length of 3,970 specimens has been measured.)

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Baltic-Belt Seas Committee

1957

By Aa. J. C. Jensen

Denmark

(Aa. J. C. Jensen)

From the S/S "Biologen" quantitative hauls with the standard trawl were made in the Belt Sea in April/December and at Bornholm in August, and quantitative hauls with the ring-net, the Hensen net, and partially the Clarke-Bumpus plankton sampler were made in February/April, June/August, and in November. The motor-boat "Havkatten" was used for fishing with the Johansen young-plaice trawl on the coasts. At Bornholm the quantity of young flatfish on the coasts was investigated by fishing with the hand-push net.

Motor-boats and row-boats were used for work in certain coastal areas which it is proposed to reclaim for agriculture.

Market samples of plaice were measured in Grenaa, and at Bornholm, of cod and plaice.

Marking of plaice was undertaken in the Belt Sea in connexion with transplantation, and cod tagging was performed in the Belts, Western Baltic, and at Bornholm.

Hydrographical observations were made regularly during the cruises. As regards plankton sampling from the research vessels and at fixed stations, and determination of ^{14}C, see the report of the Plankton Committee.

Finland

(Erkki Halme)

See the Gadoid Fish, Herring, and Plankton Committees.

Germany

(R. Kändler)

Work on Fish

As in previous years the spawning survey was made three times a month, together with the regular plankton sampling from the "Fehmarnbelt" lightship. The investigation of the spawning places of the mackerel in the Belt Sea was continued on a cruise with the R/V "Südfall" in Kiel Bay, Great Belt, and Little Belt in June (24.—26.). Vertical hauls with the Hensen net and horizontal hauls with the Petersen young-fish trawl were made at 16 stations in order to study the distribution of fish eggs and larvae in connexion with the salinity stratification.

According to the recommendation of the Baltic-Belt Seas Committee in 1955, quantitative fishing with the standard trawl was carried out in April (12 hauls), May (6), June (5), and December (3) at various places in Kiel Bay. Attention was paid to the catches of small fish for feeding mink and for industrial processing. Monthly samples were investigated with regard to species and size composition.

At two stations in Kiel Bay monthly plankton samples were taken throughout the year by the Hensen net for fat analysis and evaluation of the food supply contributed by plankton organisms.

Poland

(Sea Fisheries Institute)

The Bottom Fauna

The data pertaining to the fauna living close to the bottom (Epibenthos) of the southern Baltic, collected by means of an Ostroumov trawl in 1956, were worked up. The results are to be printed in Vol. 10 of the Works of the Polish Sea Fisheries Institute.

A paper on the ecology of the more important invertebrates of the southern Baltic has been published (Vol. 9 of the Reports of the Polish Sea Fisheries Institute in Gdynia). It presents the quantitative distribution of the particular species in relation to the most important ecological factors (salinity, temperature, oxygen, and bottom sediments).

A paper dealing with the zoobenthos of the Vistula Firth has been completed and published.

Underwater Investigations

Investigations on the distribution and quantity of *Furcellaria fastigiata* have been carried out in the shallow waters of Puck Bay by means of a submarine apparatus, the aqualung. It has been stated that the production of this alga, which has been brought in by the currents, is sufficiently rich for a prospective exploitation. Numerous photographs of this underwater species were taken. These algae have settled and cover now the sea-bed, forming compact communities. The film illustrating the methods of underwater investigation has been ruled (method of lineal pictures and method of squares). This method allows an approximate estimation of the quantity of the bottom flora.

Phytoplankton

The data on the vertical and horizontal distribution of phytoplankton in the southern Baltic in early spring have been worked up. Material collected in

1956 at 38 stations extending from the Arkona to the Gdansk Deeps has served this purpose.

Zooplankton, see the report of the Plankton Committee.

Work on Fish

Flatfish. 4,000 specimens of flounder from two cutter landings were measured. 1,200 specimens from the region of Gdansk and 800 from the Bornholm region were analysed in order to determine the length, weight, and sexual maturity.

Sprat. The number of fish investigated in 1957 is given in the following table:—

Area	Number of samples	Number of measurements	Number of age determinations
Gulf of Gdansk.....	27	10,201	1,037
South of Bornholm ...	10	4,152	455
Pommerania Bay	3	706	96

The fat content was determined in 50 samples taken from catches in the Gulf of Gdansk.

Sweden

(G. Otterlind)

In May and June measurements were made of catches of flounder, plaice, and dab, taken by the "Skagerak" in the southern Baltic.

Preliminary investigations on the bottom fauna of the Åland Sea were made by G. Sellerberg in October.

The plankton investigations in the Bothnian Sea were continued. The main part of our activity was devoted to the Baltic herring and cod, cf. the reports of the Plankton, Herring, and Gadoid Fish Committees.

U.S.S.R.

(T. Dementjeva)

Work at Sea

A survey of the commercial stocks of salaka (Baltic herring), cod, kilka (sprat), and flounder was made by market investigations at the various landing places at Tallinn, Pärnu, Kolka, Mangali, Ventspils, Liepaia, and the Bay of Vistula. Experimental fishing was carried out in the Gulf of Riga and in the Baltic proper.

A forecast for 1958 of the prospects of the fishery for the above mentioned species was made on the basis of this information, with the aim of planning the fishing operations.

Work on Fish

Flounder. The localities of feeding grounds in the coastal areas of the Gulf of Finland and the Gulf of Riga were studied, in connexion with the collection of information on the distribution, age composition, and growth-rate of the flounder.

Together with these investigations the distribution of algae was also studied.

Eel. The diurnal migrations of eel from the lower part of the River Gauya into the Gulf of Riga (Latvian SSR) were investigated.

Publications 1957

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Comité Atlantique

1957

Par Jean Furnestin

Des rapports sur les travaux effectués en 1957 dans le secteur du Comité Atlantique ont été reçus du Danemark, de l'Espagne, de l'Irlande, de la France et de l'Union Française.

Danemark

(E. Bertelsen)

The hydrographical-biological section from Cape Farewell to about Lat. 51°N, Long. 31° W and from here along 51° N to the English Channel was operated by the "Dana" from 9. to 18. August 1957. Hydrographical observations were made on each of the 25 stations and on every second station pelagic fishing with 2 m stramin net was carried out. Chlorophyll determinations and measuring of primary production (^{14}C technique) were made at 10 and 16 stations respectively.

Espagne

(F. de P. Navarro)

Des observations hydrologiques à portée locale ont été poursuivies régulièrement par les Laboratoires de Saint Sébastien, Santander et Vigo.

A Santander des pêches planctoniques ont été faites pendant les périodes de ponte des espèces de poissons d'intérêt commercial.

Pendant le mois de décembre, des travaux bathymétriques ont été effectués par le navire "Xauen" dans la région de Ceuta, au Détroit de Gibraltar.

Avec la collaboration des bateaux de pêche, de nombreuses observations ultra-sonores ont été effectuées sur la côte cantabrique, ainsi que dans la région du Détroit de Gibraltar sur les déplacements du thon.

Irlande

(A. E. J. Went)

During 1957, apart from work on shellfish and salmon and trout which has been reported to the appropriate Committees, no work was carried out within the province of the Committee in this country. During the year a number of fishes rare to Irish waters were recorded. Notable amongst these were specimens of the pilot fish (*Naucrates ductor*), torpedo (*Torpeda nobiliana*), forked bearded hake (*Urophycis blennoides*), and ray's bream (*Brama raii*). Several specimens were obtained of each of the greater weever (*Trachinus draco*) and the sting ray (*Trygon pastinaca*).

France et Union Française

(Institut des Pêches)

(a) Le navire océanographique "Président-Théodore-Tissier" a étudié du 1er au 17 mars le banc Porcupine entre 52° et 53° N. 63 stations ont été effectuées dans cette région où une série de sondages ultra-sonores a permis de continuer la carte entreprise en 1954. 27 dragages de sédiments ont été faits ainsi que 18 traits de chalut entre 250 et 840 m pour étudier la distribution et l'abondance des espèces sur ces fonds, principalement du merlu. Lors des stations 55 pêches de plancton et 146 prises d'eau ont été effectuées.

Du 22 mars au 23 avril: Etude du maquereau en Mer Celtique. 146 stations ont été faites, principalement dans les régions de Trévose, Labadie, Melville, Shamrock et Parsons, soit 78 chalutages, 106 pêches de plancton et des mesures de pigments ainsi que 228 prises d'eau. Des observations ont été pratiquées sur la taille, la maturité sexuelle et la nourriture du maquereau; 1752 individus ont été marqués.

Du 27 mai au 5 juin: Etude des accores du Golfe de Gascogne de 47°N à la région du Cap Finisterre. Un enregistrement systématique des fonds entre 200 m et 2000 m a complété les données recueillies antérieurement dans cette région. Des cartes provisoires ont été établies. Quelques traits de chalut entre 300 et 700 m ont ramené un échantillonnage de la faune.

Du 5 au 13 juin: Recherche du germon. 36 stations ont été réalisées entre le Cap Finisterre et Gibraltar, certaines jusqu'à 2000 m, comportant 289 prises d'eau et 27 pêches de plancton. Le premier germon a été pris le 6 juin dans la région au NO des Berlingues.

(b) Les bateaux-pilotes-de-pêche "Donibane" et "Vincam II" ont poursuivi en 1957 leur travail sur les pêcheries de sardines, le premier de janvier à avril entre Saint Jean de Luz et Arcachon, le second d'avril à août entre Loire et Gironde, tous deux effectuant un service régulier de détection des bancs de poissons et des observations hydrologiques.

(c) La frégate "l'Aventure" de la Marine Nationale, a fait en octobre 1957 une section hydrologique entre Terre-Neuve et Brest comprenant 22 stations, dont certaines jusqu'à 3.000 mètres.

L'aviso garde-pêche "Ailette" a procédé à des observations hydrologiques de surface en Atlantique Nord en Mer d'Irlande et en Manche.

Deux escorteurs du Maroc ont effectué en mai 24 stations hydrologiques profondes entre le Cap Cantin et Madère ainsi qu'au large du Cap Sim; en août 19 stations entre Mogador et les Iles Canaries et entre le Cap Cantin et Madère; en novembre 16 stations hydrologiques sur le plateau continental marocain.

Les escorteurs de la Marine Nationale basés à Brest ont effectué deux missions hydrologiques systématiques à l'ouvert de la Manche en janvier puis en août 1957.

(d) La "Calypso" du Centre National de la Recherche Scientifique a fait de juillet à septembre, entre Brest, les Açores, Madère et les côtes d'Europe et d'Afrique, 59 stations dont 23 jusqu'à 4.000 m.

(e) Les frégates météorologiques "Mermoz" et "Le Verrier" ont poursuivi les recherches hydrologiques et les pêches de plancton de surface aux points J et K et sur les routes aller et retour.

(f) Les espèces ichtyologiques comestibles pêchées au chalut par le "Président-Théodore-Tissier" ont fait l'objet de mensurations et d'observations diverses. Les principales espèces étudiées à bord et dans les laboratoires de l'Institut des Pêches ont été: maquereau, sardine, hareng, germon, lieu jaune (*Gadus pollachius* L.) ainsi que les mollusques comestibles et le homard.

L'albacore (*Neothunnus albacora* Lowe) et les autres thonidés, les clupéidés (sardinelles, anchois) ont été plus particulièrement étudiés par les laboratoires de la France d'Outre-Mer, au Maroc, en Mauritanie, au Sénégal, en Guinée, en Côte d'Ivoire et en Afrique Equatoriale Française.

U.S.S.R.

(V. Borodatov)

In June 1957 the Research Institute of Marine Fisheries and Oceanography of the USSR (VNIRO) organized and carried out a fishery research expedition in the eastern part of the Atlantic Ocean covering the area from the English Channel in the north to the Gulf of Guinea in the south.

The expedition was undertaken in order to define the main oceanographic characteristics of the area under investigation and the distribution of commercial species, mainly sardine and tuna.

During the cruise of the R/V "Kazan" from 29. June

to 20. November a great amount of material was obtained on the composition of the ichthyofauna, quantitative and qualitative characteristics of plankton, and the distribution of hydrologic and hydrochemical elements. 163 oceanographic stations were worked.

Large collections of fish and shellfish were secured and 38 samples of sardine and tuna were analysed (complete biologic analyses).

It was found that the most productive of the whole area of investigation was the coastal stretch of 30 to 40 miles wide. The basic mass of zooplankton—fish food—was mainly represented by Copepodae.

The main concentration of biomass of zoo- and phytoplankton was observed in the area from the Cape Verde to Freetown.

The behaviour of sardine (*Sardinella aurita*) was investigated in the Cape Verde region where dense concentrations of this fish were encountered. Regular vertical migrations were observed: very dense shoals kept at the near-bottom layers in the day-time, while at night they rose to 30—40 m from the surface. Some shoals of *S. aurita* were also found at the very surface and were clearly seen by day and night.

Such an occurrence of shoals both in the bottom and upper water layers makes it possible to conduct fishing operations with both demersal trawl and purse seine.

In all areas investigated studies were made on the reaction of fish to sources of light placed under and above the water surface.

Application of horizontally and vertically operated hydroacoustic devices enabled us to follow the diurnal migrations and distribution of the sardine in the Cape Verde—Freetown region.

Our investigations in the Eastern Atlantic, which commenced in June 1957, will be continued in 1958.

Publications 1957

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Comparative Fishing Committee

1957

By C. E. Lucas

The last Administrative Report of this Committee made reference to the urgent need for solutions to the problems met by the Permanent Commission in attempting to secure satisfactory conservation of fish stocks in the north-eastern Atlantic, and it was felt that sufficiently rapid progress could only be made on a co-ordinated basis. At its statutory meeting in October 1957, the Committee gave its full attention to this problem with the result that one of the most important things emerging from that meeting was an agreement between representatives of the various countries to co-operate on a wide programme of internationally co-ordinated research. It is perhaps too optimistic to think that anything like the whole of the results can be obtained, even by co-operative effort, during the first year, but there is reason to hope that a major step forward will have been made before the Committee meets again.

The other, and equally important aspect of that meeting, concerned the report on the conjoint meeting between ICES, ICNAF, and FAO in Lisbon, for part of which the Committee was responsible, together with recommendations arising from a special meeting of those members of the Committee who were present in Lisbon. As a result several recommendations were adopted by the Council which should go some way towards standardizing techniques of comparative fishing investigations, not only within the Council's area but throughout the North Atlantic.

The meeting in Lisbon itself was in fact a tribute to the results which had been achieved during the previous year or two by members of the Committee,

and their colleagues in ICES and other countries, in various aspects of comparative fishing investigations and population dynamics. In fact, more than two dozen papers were contributed to the Lisbon Symposia by members of the Committee, with contributions from ten of the member countries of ICES. In addition, eleven contributions were made by members on the occasion of the October meeting and it will be noted that reports on work in progress from ten countries are attached below, while it is known that work is also proceeding in other countries.

It will be agreed that this represents most satisfactory progress from the inadequate state of our knowledge which led to the Resolution in 1948 that a Comparative Fishing Sub-Committee of the then Southern North Sea Committee should be set up. Progress to date was duly recognized by the Council in deciding that the then Sub-Committee should receive the status of a full Committee. It has more recently been recognized by the decision that, as contributions from time to time have made clear, the scope of the Committee's work be recognized as including studies of the effects of fishing, or population dynamics. This is undoubtedly one of the instances, however, in which a committee cannot afford to be content with the present rate of progress, and even more co-ordination will be necessary in the future than we have so far achieved. An encouraging sign lies in the recent arrangements whereby research cruises of several countries have been planned in conjunction so as to provide more directly comparative data than has previously been available.

Belgium

(Ch. Gilis)

At regular intervals, experimental fishing with trawl nets of different widths of cod-end meshes (70, 75, and 80 mm) were carried out. Each net was used together with a cover net of 40 mm meshes. The nets were used alternately, for (a) determination of the catch (fish, shellfish, and other invertebrates), (b) recording the number and lengths of cod, haddock, whiting, plaice, dab, sole, and flounder (also the weight of these species of fish).

The object of these experiments was to study the saving effect of those nets and in particular as regards the sole fishery.

Denmark

(Aage J. C. Jensen)

Selection of meshes of hemp and with single and double cotton twine has been investigated in September and November.

England

(A. R. Margetts)

A trawl cod-end mesh selection experiment was carried out on North Sea cod. With this was combined an investigation into the effect upon selection results of the method of rigging a cod-end cover; the change from a cover with a big overhang beyond the end of the cod-end to a cover without any overhang reduced the 50 % selection length of cod by 3 cm.

Mesh selection experiments were carried out with drift-nets and the quality of drift-net catches was compared with that of ring-net and trawl catches.

Further measurements were made of the towing drag of cod-ends. The resulting graphs of load against speed for different cod-ends showed the drag of a 53 mm double-braided sisal cod-end at 3 knots to be 100 lb. more than that of a 69 mm double manila cod-end, and increasing speed from 3 to 5 knots increased the drag of such cod-ends threefold.

Germany

(A. von Brandt)

Trawl Gear Investigations

The investigations to demonstrate the amount of decrease in towing resistance obtainable by the use of hydrofoil ("Süberkrüb") otter-boards and a "perlon" net with thinner yarns, instead of the common outfit, have been finished. When testing a German type of herring bottom-trawl of a big deep-sea trawler size, a reduction of about 30 % of the total resistance could be obtained, 24 % of which was due to the boards, while 6 % was due to the net.

Furthermore, the performance and behaviour of three different types of one-boat floating trawls have been tested by means of measuring instruments. Including direct observation and echo-sounding of the gear and its different parts from a motorized rubber-boat, this rational method proved to be very effective for the systematic development of such gear to optimal performance. Data collected on the depth of such gear under different conditions again proved the limitations of the warp-angle method and the need for a more accurate method independent of the influence of outer factors. Measurements of the towing resistance showed that by using hydrofoil otter-boards, nets with a considerable opening size (for instance 8·5 m × 15 m or 11 m × 11 m) can be towed with sufficient speed by one cutter (about 180 HP) only. Possibilities of towing the gear aside from the propeller wake (which can have a frightening effect on fish near the surface) have been tested by applying unsymetric shearing forces. It proved that rather big forces are necessary to obtain this effect without decreasing the opening width, requiring a special shearing board of a size being probably too unhandy for common use. Therefore, a skillful utilization of current or wind-drift and changes, of course, is recommended for the time being.

Mesh Selection Experiments

In connexion with investigations on the relations between various net materials and mesh selection, several experiments were carried out by means of the

covered cod-end method. The basic idea is to investigate the properties changing with the individual fibres, but also with the number of the net twines made of the same fibre, and to examine how far these properties, independent of the type of fibre, are influencing the varying sizes of the selection factors. These experiments were carried out by the research vessel "Anton Dohrn" in the 110 mm area off West Greenland, in particular for cod. The mesh size in the cod-ends amounted to about 130 mm. The trawl was made of manila, only the cod-ends used were made of varying materials. The various net twines for the cod-ends were considered of equal value from the fishery's point of view. The following mesh size/50 % escape length factors for cod were found off the west coast of Greenland:—

Cod-end of manila	3.7
Cod-end of trevira	3.8
Cod-end of perlon.....	4.0

Trevira is a polyester fibre like terylene.

It appears that the difference of the selection factors between cod-ends of manila and those made of trevira is small. It is therefore not correct, as far as the selection is concerned to talk generally of the varying behaviour of the nets made of synthetic fibres as compared with those made of natural fibres. Moreover, it appears to be remarkable that the load-elongation curves of the twines made of manila and trevira only show small differences as compared with those made of perlon. That supports the view that not the type of fibre but, primarily, the properties of the net twines would be decisive for the degree of selection and thus also for the definition of light trawls.

Netherlands

(L. K. Boerema)

Little time has been available for comparative fishing experiments.

Some experiments have been carried out on cod-end mesh selection in the herring trawl with mesh sizes in the cod-end ranging from 5 to 7 cm, double manila, using the covered cod-end technique. Data were obtained on herring and whiting. The whiting figures were in agreement with those published in the *ad hoc* Committee Report. (J. du Cons., **23**: 7—37.)

A few series of experiments have been devoted to the relationship between speed of towing and quantity caught, using different lengths of towing warp. All series showed a decrease in numbers of flatfish caught with increasing speed.

The investigations mentioned above were carried out with the research vessel "Willem Beukelsz". From records of commercial landings the relationship of horse-power and gross tonnage with fishing power of herring trawling vessels, and of cutters trawling for demersal fish, has been computed. In both cases the correlation between fishing power and horse-power appeared to be closer than that between fishing power and gross tonnage.

Apart from these investigations, some technical experiments have been carried out in which:—

(a) measurements have been made on the relation between depth, length of warp, and inclination of the otter-boards;

(b) measurements have been made of the towing resistance of the trawl net and of the otter-boards;

(c) trials have been made with a new type of herring trawl;

(d) trials have been made with the Elac Lodar.

Norway

(G. Sætersdal)

A series of mesh selection experiments, for the purpose of comparing results from the two methods (a) parallel hauls and (b) covered nets, were carried out on the East Finnmark grounds from 1. to 14. April. The vessels "G. O. Sars", "Thor Iversen", and "Peder Rønnestad" were used. Due to adverse weather and fishing conditions only a small number of successful parallel hauls were obtained. These experiments have been referred to in the paper S-35 submitted to the meeting of ICNAF, ICES, and FAO in Lisbon 1957.

The results of a number of covered net hauls with a double manila cod-end of a mesh size of 14·4 cm, comprising arctic cod, arctic haddock, and redfish were given in the paper S-37 presented at the same meeting.

During a cruise with the R/V "G. O. Sars" in the autumn of 1957, four days were spent on a mesh selection experiment on cod and haddock in the East Finnmark area. The gear used was a manila trawl equipped with a nylon cod-end (mesh size 14·0 cm). The results are given in an abstract of the cruise report which was circulated to members of the Comparative Fishing Committee in December 1957.

Poland

(W. Cieglewicz)

The investigations of the selectivity of the trawl cod-ends using the cover method, started last year, were continued.

The influence of different materials on the selectivity of cod-ends was studied by the use of cotton, manila, hemp, and sisal nets.

Altogether 11,264 cod specimens were measured, from which 2,577 were passed to the exterior cover bag. At the same time the length-girth relationship of the cod was investigated.

Scotland

(B. B. Parrish)

Scotland's participation in the Committee's programme of work in 1957 was concerned mainly with the collection of further trawl cod-end selectivity

data, principally for haddock in the 75 mm area. Two cruises by F. R. S. "Explorer" in January and November/December, and one cruise by F.R.S. "Scotia" in July were devoted to the investigation of the following aspects of this major problem:—

1. Comparison of the cod-end selectivities of trawls made of the same material but of different designs and rigs.

   Comparisons were made with standard "Aberdeen" and "Granton" type trawls, using the same cod-end. Selection factors of 2.8 (Aberdeen trawl) and 3.2 (Granton trawl) were obtained for haddock, using the covered haul technique.
2. Further studies of the "masking" effects of small meshed covers.

   Preliminary results from hauls made with a small, tightly fitting and a larger loosely fitting cover over the cod-end of a standard Aberdeen trawl gave a higher selection factor for haddock with the loosely fitting cover. These results suggest that the extent of "masking" is governed by the size and rigging of the cover. Further studies of this problem are being planned.
3. Comparison of the selectivities of trawl cod-ends made of different materials.

   Cod-ends of double 75's and 150's manila twine and a single nylon cod-end were used with "Explorer's" Aberdeen trawl using the covered net technique. The selection factor for haddock were as follows:—

75's manila	= 3.0
150's manila	= 3.1
single nylon	= 3.3

Other comparative fishing work carried out in 1957 consisted of:—

(i) Continuation of the study of model trawls and seines with a view to determining the dimensions and action of these gears in operation.

(ii) Measurements of trawls and seines with underwater instruments.

(iii) Experimental fishing with herring trawls in the Scottish north-western North Sea.

Seven papers on aspects of comparative fishing work were submitted at the joint ICES—ICNAF—FAO meeting at Lisbon in May and four at the FAO Gear Congress in October.

An important event during the year has been the construction of a new research vessel to replace the laboratory's inshore boat "Kathleen". This vessel, launched as the "Mara", should be commissioned around the middle of 1958 and it is expected that a substantial amount of her work will be concerned with experimental fishing. She has been designed as a seiner/trawler, so that trawling can be conducted by the side and by the stern, while she should also be able to line, and, if necessary, drift a limited number of herring nets.

Sweden

(G. Otterlind)

In the period 20. May to 19. June 1957, some investigations were made into mesh selection of manila cod-ends used on ordinary Swedish cotton fish trawls (headline 70 ft.). The cod-ends, made of single manila (100 yards per lb.) had the mesh sizes 67, 79, and 89 mm, respectively. In all experiments the cod-end was covered completely by a sack of cotton spratnetting (12/18, bar 11 mm) having a diameter of 2 ft. wider than the cod-end and overhanging the distal end of the latter with about 5 ft. No support arrangement for the cover sack was used. The experiments were carried out by the "Skagerak" in the southern Baltic. Because of the low abundance of young cod on the trawling grounds at that time the catches in the selection range were rather insignificant. Furthermore, the values of the 50 % length of cod obtained from combined catches were very low: 15, 15, and 23 cm for the 67, 79, and 89 mm meshes, respectively. This fact was obviously a consequence of two circumstances: the trawls were quite new with loose and large knots in the cod-ends and the netting of the cover was too close. Further investigations will be made in 1958.

U.S.S.R.

(A. Treschev)

Experiments were made with the aim of determining selection of sizes in different parts of trawls and their rational design. The selective capacity of cod-ends was studied in relation to the design of material and mesh size.

Investigations were made in connexion with the development of devices controlling trawl operations. Experimental fishing with mid-water trawls was carried out.

Collection of data on the selectivity of drift-nets applied for herring fishing in the North Atlantic was continued. The selective effect of these nets was studied in respect of varying degree of fatness of fish specimens.

The working properties of cordage and knotless material were examined.

Publications 1957

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Gadoid Fish Committee

1957

By G. Rollefsen

Denmark

Greenland (P. M. Hansen)

Cod. Occurrence of fry has been studied in inshore waters and in the fjords by the "Adolf Jensen" and in the Davis Strait by the "Dana". Otolith collections, together with length measurements have been obtained for stock analyses (about 8,000 otoliths).

Hauls with fine mesh hand seine and shrimp trawl have been taken to study occurrence of cod belonging to the three youngest age-groups. Tagging experiments have been carried out on 5,228 cod in different regions along the west coast of Greenland from 60°NL to about 67°NL, and on 567 cod in the Angmagssalik District on the east coast of Greenland.

Gadus ogac. Sampling of otoliths, together with length measurements.

Faroes (J. S. Joensen)

Cod. The investigation of the Faroe stock was continued in 1957. Measurements and otoliths were collected from both commercial and research vessel catches. During the spring 1,568 age determinations and 7,390 measurements were carried out and in November 500 otoliths were collected. In April, the abundance of eggs was investigated by 28 vertical hauls with the Hensen net and in June "Dana" made a number of hauls with the 2 m ring-trawl.

In the autumn 450 cod were tagged from the M/C "Akranes".

Coalfish. 200 otoliths of coalfish from Fuglø Bank were collected and 1000 measurements were made.

North Sea (J. Knudsen)

Whiting. The extensive whiting investigations, started in 1956, were continued in 1957. The grid of stations was fished twice during the year (in April/May and in August/September) by the research vessel "Dana" assisted by "Jens Væver" in August. 26,000 length measurements were made and 5,615 otoliths were collected to give information on the relative abundance, growth-rate, and mortality in different areas of the North Sea, compared with the Skagerak and Kattegat. An investigation on the meristic characters (number of vertebrae, fin rays, and gill rakers) of samples of the 1956 year-class was started.

About 4,000 whiting were tagged during the year, about 1,600 with internal tags and the rest with hydrostatic external tags.

England

(G. C. Trout)

Cod. (Barents Sea). Six cruises by the "Ernest Holt" to the Barents Sea provided length measurements of 14,935 fish and 1,095 otoliths in stratified samples for an age/length key. Information on the distribution of the shoals was derived from trawl surveys between the north of Spitsbergen and the Norwegian coast. During three cruises a total of 3,630 cod were tagged with Lea tags or plastic flag tags, attached by monofilament and plaited nylon and nylon "wool" loops.

From market measurements a further 54,187 length measurements from Barents Sea landings and 1,925 otoliths in stratified samples were obtained at Hull and Grimsby.

Market Samples

This sampling provided the following numbers of length measurements and otoliths.

	Length	Otoliths
Cod		
Greenland	4,847	126
Iceland	28,783	1,086
Faroes	2,860	—
North Sea (trawl)	36,951	1,154
North Sea (seine)	16,860	—
Irish Sea and west coast	3,663	—
Haddock		
Barents Sea	22,349	704
Iceland	7,730	—
North Sea (trawl)	24,802	—
North Sea (seine)	5,286	—
Irish Sea and west coast	2,061	—
Faroes	5,077	—
Hake		
All areas	74,249	—
Coalfish		
All areas	4,641	—

In addition, 6,502 whitings were tagged in the Irish Sea as part of an urgent local problem, and 307 hakes were also tagged. North Sea whiting tagging resulted in a total of 220 being released.

Finland

(Erkki Halme)

From the research vessel "Aranda" experimental fishing with long-lines was undertaken for estimating

the stocks of cod (*Gadus callarias*). The Bureau for Fishery Research worked also field stations on the coast of Finland for experimental long-line fishing for cod.

France

(Institut des Pêches)

Les recherches sur le lieu jaune, *Gadus pollachius*, ont été poursuivies sur des exemplaires provenant de la Mer Celtique et du Golfe de Gascogne. Près de 700 individus ont fait l'objet d'études portant sur la taille, le sexe et l'âge.

Au cours des campagnes du "Président-Théodore-Tissier" à l'ouest de l'Irlande et en Mer Celtique des observations sur la répartition et la taille des merlus suivant la profondeur ont été effectuées en mars et avril; pendant cette même période la distribution d'autres gadidés tels que *Haloporphyrus*, *Mora*, *Phycis* et *Molva* a également été étudiée.

Dans la partie nord de la Méditerranée nous avons commencé l'étude biométrique et biologique du merlu.

Germany

(U. Schmidt)

Work at Sea

The work on haddock, whiting, and saithe was continued on the same lines as in previous years.

Five of the cruises with the R/V "AntonDohrn" in 1957 were devoted mainly to investigations on haddock, whiting, and saithe (January/February research on haddock and whiting in the Skagerak and the areas of the north-eastern North Sea; September/October research in the areas German Bight, Dogger Bank, Gut, and Fladen Ground, also on haddock and whiting. Saithe investigations in February/March off the Svinøy/Halten Bank and Otter Bank—Muckle Flugga area, and in November/December off the Norwegian north-western coast). Samples of the fish caught at all trawl stations were examined for length, sex, maturity, stomach contents, and weight, and otoliths were collected. The relation between abundance and environmental factors, especially hydrographical conditions, was also studied, and further detailed studies on local currents and internal wawes and their influence on density and behaviour of the fish stock were carried out. In spring, observations were made on the occurrence of saithe eggs and fry on Svinøy and Halten Banks.

Work on Fish

The number of fish examined during the different cruises was as follows:—

	Length measurements	Age determinations
Haddock	10,971	3,046
Whiting	19,038	1,333
Trade ling	—	173
Torsk (*Brosme brosme*)	—	175
Saithe	656	7,630

Market Measurements

Market sampling on commercial landings from all fishing grounds was continued by the Institut für Seefischerei, Hamburg, and the Biologische Anstalt Helgoland, Bremerhaven. The following measurements were made:—

	Length measurements	Age determinations
Cod	37,239	13,436
Haddock	17,391	2,158
Whiting	4,645	—
Saithe	—	40,603

Programme of Work

In 1958 the investigations on haddock and whiting in the North Sea will be continued during the cruises of R/V "Anton Dohrn" and by means of market measurements on the same lines as in the previous years. As regards saithe tagging experiments on Icelandic and Norwegian fishing grounds and further studies on the influence of environmental factors on the behaviour and the abundance and availability of the stock to the fishery will be of particular interest.

Iceland

(Jón Jónsson)

Work at Sea

For a general description of the work carried out, see the report of the Distant Northern Seas Committee.

Work on Fish

Cod. The sampling from the seasonal cod fisheries was continued. From commercial catches during the spawning season 19,650 cod were measured and otoliths of another 9,883 fish were read. On board the research vessel "María Júlía" 12,008 cod were measured and otoliths of 4,249 were collected from various places around the coast. From trawling on the West Greenland banks 3,864 cod were measured and otoliths of another 1,345 fish were taken; from the East Greenland banks 870 cod were otolithed.

In Icelandic waters 2,799 cod were tagged during 23 different marking experiments and 124 fish were tagged at West Greenland.

Haddock. Of haddock all material was collected by the R/V "María Júlía" (except 427 fish taken by commercial trawlers; these fish were measured and 200 otoliths were collected). 18,607 haddock were measured and otoliths taken from 4,675 fish. Furthermore 3,664 haddock were tagged in 19 different tagging experiments.

Ireland

(A. E. J. Went)

No work has been done in this country during 1957 on the subject matters covered by the Gadoid Committee.

Norway

(G. Sætersdal)

Work at Sea

Two cruises were made with the R/V "G. O. Sars" to the coastal banks off North Norway and to the Barents Sea area. The work consisted mainly of hydrography, experimental echo-surveys for cod, marking of cod and haddock, and sampling.

Work on Fish

Cod. The sampling of the arctic cod was continued in the same way as in previous years, but was partly hampered by the unusually poor fishery in the Lofotens where 16,000 fish were measured and 7,000 otoliths read. The corresponding numbers for the Barents Sea area were 18,000 and 11,000.

1,498 "skrei" were tagged in Lofoten, while 1,490 marked cod were released from the "G. O. Sars" mainly on the Finnmark grounds.

The investigation of the trap-caught cod on the Helgeland coast, which was started last year, was continued and 623 of these cod were marked.

Haddock. Market and research vessel sampling mainly in the Finnmark area includes 3,000 measurements and 5,000 otoliths. 708 fish caught by trawl were marked.

Saithe. Otoliths of about 1,600 fish from western and northern Norway were read. 1,284 tagged saithe were released in the Finnmark area and 500 off Grip in western Norway.

Poland

(St. Rutkowicz)

Work on Fish

Baltic cod stock. For stock analyses the following investigations have been made during 1957:—

From trawl catches on the south-eastern fishing grounds of the Baltic 31 samples were taken partly on the fish market and partly on board the research vessels. Sex, maturity, length, and weight of 3,346 fish were determined. 3,197 age determinations were made by means of the otoliths. 21 mass measurements were made and the length of 19,032 fish determined.

From trawl catches in the Bornholm Basin 27 samples were taken. 2,574 fish were analysed and determined for age. Measurements of 22,029 cod were made. 808 cod from long-line catches were analysed.

The stomach contents of 1,305 specimens were analysed and determined.

Tagging experiments. Tagging of cod has also been continued on various fishing grounds in the southern Baltic. 1,524 cod were tagged and released, silver and plastic tags being used. There have been 78 returns (5.1 %). The highest ratio of returns was from the fishery grounds in the Bornholm Basin (7.5 %).

Data concerning the ecology of the cod (hydrography, spawning conditions, survival of larvae, and planktonic food) were collected.

Investigations concerning the occurrence and distribution of the juvenile cod on the various fishing grounds were continued.

Scotland

(R. Jones)

Work at Sea

The research ships "Explorer" and "Scotia" were in full commission throughout the year. "Scotia" was utilized mainly for hydrographic and planktonic research while the bulk of the trawling work was undertaken by "Explorer". Routine sampling of the North Sea haddock and whiting stocks was done by "Explorer" in March, June, August, and October/November. These cruises were designed to link up as far as possible with the four similar cruises made by "Explorer" in 1956.

In 1957 "Explorer" commenced a detailed survey of Icelandic waters and three intensive trawling programmes around the entire coast-line were made in April/May, June/July, and September/October. Two cruises to Faroe were made in January and November/December to undertake gear selectivity experiments. The effect on mesh selectivity of different twine thicknesses in the cod-end was studied. A comparison was also made between the catches of an Aberdeen and a Granton trawl.

In addition to her hydrography/plankton work, "Scotia" undertook a limited amount of trawling work. Of particular interest were a pelagic trawling cruise in April and a mesh selection experiment in July. In this last, observations were made on the effect of different rigs of small mesh cover, on cod-end escapement.

Work on Fish

Haddock. Data collected by "Explorer" in the North Sea and also by sampling on the Aberdeen fish market will be made available in Ann. Biol., **14**. The 1956 data, which were not submitted to the Annales, will also be included in Vol. **14**. In addition, many useful data relating to the state of the North Sea and Faroe haddock stocks have been collected and are being studied. A total of 1,365 haddock were tagged and liberated from small line boats working out of Arbroath.

Whiting. Market sampling of the North Sea whiting stocks was commenced in September 1957. Also, extensive sampling of the North Sea stocks has been carried out by "Explorer" during the four routine cruises, and the data collected are being studied. A total of 158 whiting was tagged and liberated from "Kathleen".

Cod. Further cod stomach material has been collected during 1957.

Spain

(J. Cuesta)

Merlu. Des observations biologiques et biométriques ont été effectuées à Santander, sur des exemplaires à grand taille, prises à la ligne aux accores du plateau continental.

Sweden

(G. Otterlind)

Work on Fish

Cod. In connexion with mesh selection experiments with the "Skagerak" in the southern Baltic in May/June 1957 length measurements were obtained from the catches of cod. Commercial catches from the Åland Sea and the Bothnian Sea were measured in May and October. To some extent samples have also been collected for age and maturity analysis. In the Åland Sea 538 fish from a depth of ca. 240 m were marked with the Lea tag in June. In spring 53 fish were tagged with ebonite disks on the Ångermanland coast.

U.S.S.R.

Barents Sea (P. Moiseev)

Studies of the distribution, behaviour, and strength of the cod and haddock stocks in the Barents Sea were continued in 1957 by the biologists of the Polar Institute of Marine Fisheries and Oceanography (PINRO).

During 50 cruises with research, survey, and fishing vessels the following data on the biology of cod and haddock from various parts of the Barents Sea were collected:—

	Cod	Haddock
Measurements	224,000	215,000
Age determinations	17,400	47,300
Stomach contents	47,300	—
Fat content	3,000	—
Tagging	14,500	—

Preliminary investigations of the hydrographical data collected show that the basic fishing areas in the Barents Sea must be characterized as cold in 1957.

Baltic Sea (T. Dementjeva)

Cod. Changes in the state of the stock and its distribution during the spawning and feeding periods were studied in comparison with the corresponding periods of previous years (SRT cruises in April and September/October). During a special cruise in January 1958, quantitative estimation of the occurrence of young fish was made; it revealed that the 1955 and 1956 year-classes were poor, but the 1957 class was considered to be rich. The percentage composition of young fish in the catches was determined on the basis of commercial catches. Collection of data on effort per unit (1 hour's trawling) was continued; attempts were made to find the most representative way of collecting such information.

Experimental fishing was carried out with a standard T-51 trawl in September, in order to survey the condition of the demersal stock of fish occurring in the Klaipeda area.

Herring Committee

1957

By Olav Aasen

Belgium

(Ch. Gilis)

Continuation of the study on the herring concentrations exploited by the Belgian trawlers:—

1. The full-herring concentrations of the northern and central areas of the North Sea in August, September, October, and November (1,900 herrings).
2. The spent-herring concentrations of the southernmost area of the North Sea:—
   (a) in January, end of the season 1956/57 (185 herrings),
   (b) in December, beginning of the season 1957/58 (356 herrings).

These observations cover the following data:— length, weight, sex, stages of maturity, mesenteric fat, age, vertebrae, keeled scales (K_2), stomach contents, and a biological scale. A complete and detailed study of the activity of the trawlers—the fishery and the landings—has also been made for each of these two groups.

Denmark

(E. Bertelsen)

Inner Danish Waters

(Skagerak, Kattegat, Limfjord, Belt Sea, Baltic).

The quantity and length of herring larvae were investigated by fishing with the ring-net in February/April and November from the S/S "Biologen".

Commercial samples of herring and sprat were analysed at the laboratory for size, age, maturity, and race.

North Sea

Research vessel data were collected by "Dana" in April/May and in September and, in connexion with the international herring tagging experiment in July/August, by "Jens Væver".

Throughout the herring seasons the composition of the stock in the Bløden Ground area was followed by means of regular market measurements and analyses of samples from the landings at Esbjerg. Of special importance to these investigations is the sucessful start of regular collections of statistical data on location of fishery and catch per effort from the Danish young herring fishery in the North Sea.

Faroe-Iceland Waters

As part of the collaborate herring investigations in the Norwegian Sea carried out by Denmark, Iceland, Norway, and USSR the "Dana" worked in the waters N and NE of the Faroes in June. Observations on hydrography and distribution of herring shoals were made. As usual the results were charted, together with those of the other participating research vessels at a meeting in Seydisfjord and information was passed to the interested fishermen in the Faroes, Iceland, and Norway.

Information on the occurrence of herring in the Faroese fjords was collected throughout the year.

Greenland (Paul M. Hansen)

Fishing experiments with nets and seine have been carried out from the "Adolf Jensen" in the Sukkertoppen, Julianehaab, and Nanortalik districts and from the "Immanuel" in the Nanortalik district.

Samples of otoliths and scales, together with length measurements and stomach contents have been obtained.

England

(D. H. Cushing)

Herring were sampled for biological characters at North Shields (37), East Anglia (50), and Dunmore (7). Ten and a half crans were measured at North Shields, 18 crans at Lowestoft and 10 crans at Milford Haven.

The R/V "Platessa" and R/V "Sir Lancelot" cooperated in the ICES tagging experiment on the Bløden Ground. Echo-surveys were carried out by these ships during the autumn herring season. A series of larval surveys were made from "Sir Lancelot" in November and December in the Southern Bight and eastern Channel.

Finland

(Veikko Sjöblom)

During August 1957 trial catches were made with a mid-water trawl by the "Aranda". At the same time the changes in the thermocline were recorded with a two-frequency echo-sounder. Random samples of Baltic herring were collected from the open sea areas of the Bothnian Sea, the North Baltic, and the Gulf of Finland; in all, 21 herring samples and 20 of sprat were taken from the trawl catches.

In all, 3,546 Baltic herrings were analysed as to length, weight, sex, stages of maturity, mesenteric fat, stomach contents, total number of vertebrae, number of kealed scales, age (from the otoliths as well as from the scales), and growth (according to Lea).

The special investigation of the migration of the Baltic herring was continued.

France

(Institut des Pêches)

Les études habituelles sur la biométrie et la composition du stock des harengs du sud de la Mer du Nord et de la Manche Orientale ont été poursuivies. Elles ont porté sur environ 2.000 individus (âge, taille, maturité sexuelle, moyenne vertébrale).

11.500 marquages environ ont été effectués en novembre à bord du navire océanographique "Président-Théodore-Tissier" sur le Sandettié et en Manche Orientale. Tous les poissons marqués ont été capturés au chalut. Les marques utilisées étaient de plusieurs types: la plupart étaient constituées par des plaquettes en celluloïde de couleur jaune, rouge ou noire portant l'indicatif RF suivi d'un numéro. D'autres modèles ont été employés par les observateurs étrangers embarqués à bord: marques anglaises (bouton de couleur), marques écossaises (plaquette allongée avec numéro imprimé, inséré dans la matière plastique transparente) marques dano-norvégiennes (tube hydrostatique Lea).

Germany

(K. Schubert)

In 1957 the research vessel "Anton Dohrn" made two cruises for herring investigations in the North Sea. The area investigated during the first trip from 14. January to 8. February was between 57° and 61°N and between 2° and 12°E. The second cruise from 7. September to 5. October covered the area 53°45′N and 56°35′N and between 1°20′W and 6°40′E. On these cruises herring populations and their distribution in relation to the hydrographical conditions of the area were studied. Observations were made on the behaviour of the herring in different water bodies.

During 1957 the investigations of the herring populations in different areas of the North Sea were continued along the same lines as previously. 55 samples containing 5,876 herrings from catches with the R/V "Anton Dohrn", as well as 26 commercial samples containing 1,410 herrings were analysed. Measurements were made of 32,907 herrings. Samples were obtained from the following areas: Viking Bank to Ling Bank,

Skagerak, Bressay, Fladen Ground, Gut, off the east coast of England, Dogger Bank, Southern Bight, Sandettié, Channel, Bløden Ground, and the Elbe estuary.

Herring tagging experiments by means of the German yellow plastic tag (DHb) and the Lea hydrostatic tag were carried out as follows:—

a. The first experiments took place on 25. and 26. January off Skagen. 134 trawl caught herrings were tagged with the plastic tag (DHb).
b. During the period 14. to 18. April 290 spring spawners of the coastal type were tagged in the estuary of the River Elbe at Cuxhaven and Otterndorf.
c. In the Dogger Bank area tagging was undertaken on 22. and 23. September and 1. and 2. October on board the R/V "Anton Dohrn". 1,631 trawl caught herrings were liberated in the area between 55°10′N and 55°42′N and between 0°20′E and 2°42′E. (Institut für Seefischerei).

Young stages of herring spawned during autumn and winter 1956 were caught in the German Bight for investigation of the development of the otolith centre.

In order to examine the formation of the first winter-ring young herring from the inshore areas were investigated. The study of the German coast has been continued. Data have been collected concerning the herring of the Ems esturary especially. (Biologische Anstalt Helgoland).

The investigations on the "oil" herring fishery in the south-eastern North Sea were continued. From July to September, 29 samples weighing 1,176 kg containing a total of 18,800 herring were measured. The number of whiting and haddock included in the "oil" herring catches was definitely smaller than in 1956. (Institut für Küsten- und Binnenfischerei).

Iceland

(Árni Friðriksson)

North Coast Herring

The laboratory in Siglufjord was run as usual during the herring fishing season. There, 4,936 north coast herring were examined for length, weight, sex, maturity, and number of vertebrae. Scales were collected for later investigation of age, type, etc., and otoliths were also secured. The weight of the gonads was recorded and the maturity factor calculated. The index of intestinal fat was also estimated. In addition, 200 herring originating from one of the fjords of the east coast, were examined in the same way. Finally, 1,120 herring stomachs were analysed for food content.

The tagging plan was carried out as in previous seasons by means of the same boat ("Auðbjörg"). During July, 7,500 fish were liberated off the north and east coasts of Iceland.

Netherlands

(J. J. Zijlstra)

The work on sampling the spawning populations was continued. Samples were collected from the SW Dogger area, Sandettié area, and from the English Channel. The aims of this investigation were racial and population studies.

In September/November four cruises to the SW Dogger area were made with the R/V "Willem Beukelsz" to investigate the larvae production. A study was made of the exact position of the spawning grounds and the environmental conditions under which the herring spawn in this area. Hydrographical- and echo-surveys were carried out on all of these cruises.

In December, a cruise was made to the English Channel in order to sample different spawning grounds in the area. Hydrographical- and echo-surveys were performed.

In July, a cruise was allotted to the continuation of our studies on the vertical migration of the herring. Some time was used for experiments of mesh selection in herring trawls for herring and whiting. Much time was devoted to improve the herring trawl statistics.

Norway

(Olav Aasen)

General Work

During 1957 the general work of securing samples for studying fluctuations, length, weight, vert. S., maturity, etc., was continued. 37 samples of winter herring, comprising 6,313 fish, were collected. In addition, 3 samples of fat herring (300 fish) were taken during the summer in the coastal waters between Finnmark and Hordaland.

Cruises

In 1957 the R/S "G. O. Sars" made the following cruises in connexion with herring research:—

1. 3. January to 6. February. Studies of the herring migrations towards the Norwegian coast. The positions of the approaching schools were transmitted to the fishermen. Compared to earlier years, the main influx showed a northerly displacement.
2. 28. May to 6. July. A herring location and hydrographical survey in collaboration with Denmark, Iceland, and USSR in the Norwegian Sea. The combined results were charted and distributed to the fishermen.
3. 9. July to 31. August. Fat herring investigations in the eastern part of the Norwegian Sea and western part of the Barents Sea.
4. 2. to 18. December. A herring location and hydrographical survey of the area between the Faroes and the Norwegian coast. In addition, several cruises with auxiliary ships were undertaken.

Tagging Experiments (Olav Dragesund)

In all, 25,250 herring were tagged on the Norwegian coast in 1957. These bring the total number tagged to 253,512 since 1948. Of the herring tagged in 1957, 9,500 were large herring, 8,450 were spring herring, 3,900 "forfangstsild" (recruit spawners mixed with fat herring) and 2,000 fat herring. A total of 650 fish were double tagged (internal steel tag and Lea hydrostatic tag), 750 with the Lea tags, and 23,850 with internal tags.

In 1957, tags were recovered from 1,002 fish. Of these 993 were internal tags (355 Icelandic and 538 Norwegian tags), 6 external and 3 double tags.

Poland

(J. Popiel)

Southern Baltic

The routine investigations on length, age, weight, sex, and maturity were continued. In all, 31 samples of herring comprising 2,997 fish were investigated and 13,001 were measured in the three main regions:—

	Number of samples	Number of measurements	Numbers investigated
Pomeranian Bay	9	1,451	850
Bornholm Basin	10	4,001	1,000
Gdańsk Bay	12	7,549	1,147

Samples from the Pomeranian Bay were taken during the spring spawning season from the coastal catches of spawning herring. Other samples were obtained from trawl catches on offshore grounds and consisted of a mixed stock of fish.

All age determinations and differentation between spring and autumn spawners were carried out by means of the otolith method. In some samples gill rakers were counted. Herring tagging experiments were undertaken in Gdańsk Bay by means of the flag tag type. In all, 380 herrings from stow nets were tagged and of these 6 were recovered.

North Sea

In all, 10 samples containing a total of 4,437 herrings were measured and of these 877 fish were investigated for age, sex, and maturity; 3 samples were from the trawl catches, taken during June and July on the Fladen Ground and the remainder from trawl catches made in Farn Deeps and the East Bank area in August and September.

Scotland

(B. B. Parrish)

The programme of work in 1957 was directed along the same general lines as in 1956, the chief research topics being as follows:—

1. Routine studies of stock composition, dynamics, and racial biology of the stocks of herring fished by Scottish fleets in the northern North Sea and off the west coast of Scotland.
2. The study of movements by tagging of adolescent and adult herring in the North Sea and Minch.
3. Studies of spawning behaviour and larval production and drift in the northern North Sea in autumn, and the Clyde estuary in spring.
4. Environmental studies in the north-western North Sea during the summer herring fishery, and observations on vertical migration of herring.
5. Aquarium studies, including rearing, feeding habits of herring, factors affecting survival of herring in aquaria, and responses of herring larvae to light and temperature gradients.

Samples were obtained daily from the catches taken in the Scottish drift-net fisheries in the North Sea and Minch throughout 1957, and were subjected to routine analysis for population and racial assessments. Information on the stock composition by age, length, maturity, and vert. S., obtained from these data, together with the catch and effort statistics of the fisheries, are contained in Ann. Biol., **14.**

Racial investigations were centred principally on the examination of otolith characters and of $1_{1's}$ of the North Sea samples. Attention was paid especially to the otolith types appearing in Stage VI and VII herring in August and September off the Scottish east coast, and of adolescent herring on local nursery grounds.

Tagging was conducted on the upper Moray Firth adolescent herring in February, in the northern North Sea in May and June and in the North Minch in January. The research vessel F. R. S. "Clupea" participated in the international tagging programme on the Bløden Ground in August, and a member of the laboratory staff also took part in the French tagging experiments in the English Channel in November. Details of the recaptures from these experiments are given in Ann. Biol., **14.**

Hydro-biological surveys were conducted by F.R.S. "Clupea" over the herring fishing grounds in the north-western North Sea in the period May/August. Special attention was paid to the diurnal vertical migration of herring in this region with respect to light intensity, temperature stratification, and plankton density.

Herring rearing experiments were conducted in spring and autumn, attention being paid particularly to the feeding of post yolk sac larvae. Larvae fed actively on barnacle nauplii and survived up to 15 weeks after hatching, by which time some had reached lengths of 33 mm. The responses of larvae to light and temperature gradients were also studied.

A detailed study of the spawning habits and the subsequent production and drift of larvae was carried out in the Clyde estuary in the spring of 1957. Samples of developing eggs were taken by grab and dredge on the spawning grounds, and the abundance and movements of the resulting larvae were studied. A feature of the results was the rapid dispersal and spread of larvae from the spawning area.

An investigation of the pituitary gland of herring, and the relations between its activity and the maturation cycle of spring and autumn spawning herring was started in 1957.

Sweden

(Hans Höglund)

The North Sea, Skagerak, and the Sound

Samples were taken from the catches of the commercial fishing boats in the following localities:—

1. Open Skagerak in winter (Bank herring).
2. North-eastern part of the North Sea in winter (Bank herring). Since the winter fishery in the Skagerak was very poor and was mainly based on young herring (1-ringers), most of the larger Swedish fishing boats changed their fishing area to the north-eastern part of the North Sea where a fairly good fishery with pelagic two-boat trawls was established.
3. North-western part of the North Sea (Fladen Ground area, in summer, mainly Bank herring).
4. The spawning grounds along the Bohuslän coast in March and April (the spawning season).
5. The Sound, in September. The drift-net fishery in the Sound suddenly improved after a down-period of fifteen years. The bulk of the catches (about 95 %) consisted of 2-ringers in Stage IV to VI.

Altogether, some 25 samples comprising about 3,200 fish were examined.

Exactly 1,000 spring spawners were tagged with the Lea tag and released in April in the northern part of the Bohuslän archipelago. Up to 1. April 1958, 198 of these have been recaptured.

The Baltic (G. Otterlind)

During 1957 the tagging (Lea tag) of Baltic herring off the Swedish east coast comprised 3,343 fish. 775 were tagged at Båsfjärd, south of Hudiksvall, in June; 500 at Axmarby, north of Gävle, in May/June; 425 in the archipelago of the north-western Åland Sea in May; 200 at Saltsjöbaden, east of Stockholm, in May; 542 at Tvären, between Nyköping and Trosa, in May; 701 at the mouth of the Bråviken Bay in March, and 200 north of Västervik in May/June.

A total of 8,590 Baltic herrings have now been tagged since 1954. Up to 1. January 1958 the recoveries amounted to 623, or ca. 7 %.

23 samples comprising about 2,300 herrings from different parts of the Baltic have been examined. Hauls for herring larvae were made with stramin and plankton nets in May/June in the Åland Sea and the Bothnian Sea.

U.S.S.R.

Distant Northern Seas (I. Udanov)

Research fishery for herring was conducted in 1957 during cruises of the R/V "Akademik Berg", "Professor Mesyatsev", and of survey vessels. Contrary to previous years, observations were made on peculiarities in the general distribution of the commercial stock of herring, and on the distribution and behaviour of certain year-classes, mainly those of 1950 and 1953. Hydrologic and plankton conditions were simultaneously studied in the main fishing areas of the Norwegian Sea.

The volume of collected and treated material is demonstrated by the following figures:—

	Norwegian Sea		Barents Sea		White Sea	
	Samples taken	Number of fish	Samples taken	Number of fish	Samples taken	Number of fish
Measurements.	650	194,928	42	9,100	11	1,936
Full biological analyses....	166	14,861	70	2,311	7	700
Histology of ovaries.....	11	11	—	—	—	—
Food analyses	38	1,586	—	—	—	—
Fecundity....	200	200	—	—	—	—
Fat content ..	84	265	—	—	—	—
Taggings	—	8,300	—	—	—	—
Hydrological stations	—	1,258	—	—	—	—
Plankton.....	1,979	—	—	—	—	—

Baltic-Belt Seas (T. F. Dementjeva)

Trawl catches were sampled in the winter in the Gulf of Riga in order to define the admixture of young fish, the stock composition, and the density of salaka (herring) concentrations (number of fish per m^3) by means of hydroacoustic techniques (method of measuring the reflected impulses).

The distribution of prespawning spring salaka was studied from the end of March to the end of April in the Gulf of Riga, the Gulf of Finland, the Bay of Gdansk, and in the Ventspils area. To assist fishermen, a periodical bulletin was issued on the distribution of salaka and its prospective approach to the shore including recommendations on the management, regulation, and profitableness of the fisheries.

Routine observations were made as usual in the north-eastern part of the Gulf of Riga to obtain quantitative data on the spawning of spring salaka.

Conditions of feeding of salaka were surveyed and combined with investigations of its chemical composition and variations in same according to size groups and stages of maturity, with the object of determining indices that could be utilized for forecasting the spawning approach of the salaka.

Publications 1957

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Comité de la Sardine

1957

Par J. Cuesta

Sardine

Allemagne

(H. Aurich)

Pour une étude comparative sur l'intensité de la reproduction de la sardine, des observations sur la fréquence des œufs dans la Manche et dans la Mer du Nord méridional ont été effectuées pendant une croisière de F.F.S. "Anton Dohrn" en mai 1957.

Angleterre

(D. H. Cushing)

Some pilchard samples were taken at Newlyn during the year. Failure of fishery in November and December coincided with a failure in recruitment.

Belgique

(E. Leloup)

Biological observations were carried out on the sardine caught occasionally with the herring during the months of October and November in the southern area of the North Sea.

These observations covered the data:— length, weight, sex, stages of maturity, mesenteric fat, age, vertebrae, keeled scales (K_2), and stomach contents.

Espagne

(J. Cuesta)

Au Laboratoire de Cadiz de l'Institut des Investigations sur la Pêche une étude comparative a été effectuée (croissance relative parmi les différentes parties du corps et la longueur totale) entre les populations de sardine de Barbate (Cadiz) et Larache (Maroc).

A Santander (côte nord de l'Espagne) ont été poursuivies les observations sur la ponte en relation avec les conditions hydrologiques, ainsi que sur la mortalité des oeufs.

On a continué également les observations systématiques en relation avec la biométrie et la reproduction, sur des échantillons des pêches commerciales, dans les Laboratoires de St. Sebastian, Santander, Vigo, Cadiz et Ste. Croix de Ténerife aux Iles Canaries.

France

(Institut des Pêches)

Des lots de sardines provenant de la Mer Celtique (avril), de la Baie d'Audierne (octobre), de la Baie de Plymouth (décembre) ont été examinés en 1957 par le Chef du Laboratoire de l'Institut des Pêches à Roscoff.

D'autres lots ont été étudiés par les océanographes des bateaux-pilotes-de-pêche "Donibane" travaillant de Saint Jean de Luz à Arcachon (janvier à avril) et "Vincam II" entre Loire et Gironde (avril à août).

La détection des bancs de poisson au sondeur a été faite régulièrement par ces bateaux en liaison avec les pêcheurs malgré la pénurie de poissons rassemblés sur les lieux de pêche habituels au cours de l'année 1957.

Irlande

(A. E. J. Went)

Pas de travaux sur la sardine.

Portugal

(H. Vilela)

En 1957 les travaux suivants ont été effectués par l'Institut de Biologie Maritime.

a. Représentation par mois des diverses tailles (longueur mesurée du point du museau jusqu'à la fourche caudale). Avec ce but ont été examinés:—

22.400	exemplaires	de	la	zone	nord
22.213	»	»	»	»	centre
20.806	»	»	»	»	sud
Total 65.419	exemplaires				

b. Détermination de la taille, poids, croissance, moyenne vertébrale, âge, graisse et maturité sexuelle, sur 30 échantillons par semaine et un total de 3.960 exemplaires de la zone centre.

U.S.S.R.

Voir le rapport du Comité Atlantique.

Anchois

Espagne

(J. Cuesta)

Etudes sur la ponte et la mortalité des oeufs, en relation avec les conditions hydrologiques, à Santander.

Sprat

Danemark

(Aa. J. C. Jensen)

The percentage by weight and the length distributions of sprat in 106 samples from the mixed fishery for herring and sprat in the Skagerak, Kattegat, Belts, and Baltic have been investigated. About 40 samples of sprat have been analysed for age and race also.

Norvège

(G. Dannevig)

Investigations of the abundance and distribution of sprat larvae have been continued in order to locate the spawning grounds and to study the recruitment to the stock in Norwegian waters. Material for these studies has been collected by taking vertical hauls with the ordinary plankton nets from 50 and 100 m to the surface. Such investigations have been carried out in the Skagerak area and along the southern and western coasts of Norway.

The problem of identifying local stocks, or "races" of sprat, is the subject for close examination.

Attempts have been made to study the abundance of sprat by means of echo-sounder and asdic.

Comité des Poissons Scombriformes

1957

Par H. Vilela

Scombridés

Allemagne

(R. Kändler)

In the Institut für Meereskunde, University of Kiel, a study was undertaken on the stock of the mackerel in the North Sea. The material collected during four cruises with the R/V "Anton Dohrn" in the period from February to October 1956, was investigated with regard to size, age, sex, maturity, and fertility.

The investigation of the spawning places of the mackerel in the Belt Sea was continued by a cruise of the R/V "Südfall" in June.

Belgique

(E. Leloup)

Biological observations were carried out on the mackerel landed at the fish market of Ostend. These observations covered the length, weight, sex, stages of maturity, mesenteric fat, and age.

Espagne

(J. Navaz)

Enquête statistique sur la pêche de scombridés en Galice.

France

(Institut des Pêches)

Du 22 mars au 16 avril le "Président-Théodore-Tissier" a étudié le maquereau en Mer Celtique principalement à Trévose, Labadie, Melville, Shamrock et Parsons. Des observations ont été faites sur la taille, la maturité sexuelle et la nourriture; 1752 individus ont été marqués. Cette étude a été poursuivie au cours de sorties en mer à bord de chalutiers en Mer Celtique et Mer du Nord par la laboratoire de Boulogne.

Norvège

(A. Revheim)

Samples of mackerel from commercial catches were received for age determination and study of the growth.

The samples compared both immature and mature specimens. Most of the samples were received during the summer season, but we have also some samples, caught in the winter months, from different grounds and banks in the North Sea.

The tagging experiments on mackerel were continued during the 1957 season.

In 1956 we extended the experiments to waters west of Jaeren (on the south-west coast) in the month of October. But in 1957 the experiments in these waters were no success because of bad weather conditions. In the scerries west of Bergen the tagging started at the end of May and continued in June, and at the same time another team was tagging mackerel i the Skagerak. Later on, in July, the tagging continued in the fjords south of Bergen (comparing the I and II group), and finally our programme included tagging off the coast of Jaeren in October/November. As mentioned above, this experiment was no success due to bad weather. The total number of tagged mackerel in 1957 was 2,070.

Thonidés

Allemagne

(P. F. Meyer-Waarden)

The investigations on red tuna in the North Sea were continued. 5,002 weighed tuna were measured in the sea fish markets of Cuxhaven and Hamburg. For nearly all of them the condition coefficients were computed, in order to obtain information on possible differences in the date of migration into the North Sea of the varying size groups of tuna.

France

(Institut des Pêches)

Les travaux suivants ont été effectués par la France en 1957.

Germon. L'étude des conditions hydrologiques aux dates et lieux d'apparition des premiers germons en surface a été poursuivie en 1957. Les premières captures ont été réalisées à partir du 6 juin au NO des Iles Berlinques. La remontée du germon vers le Cap Finisterre a été lente par suite d'un réchauffement tardif des eaux (16.4° C en surface). Une seconde édition de la carte de pêche du germon en juin a été établie au laboratoire de La Rochelle qui a également dépouillé les renseignements envoyés par une trentaine de navires thoniers.

Albacore. Des cartes et renseignements sur les lieux et époques de pêche de l'albacore sur les côtes africaines ont été publiés par l'Institut des Pêches Maritimes.

Norvège

(J. Hamre)

The weight distribution of 20,533 bluefin tuna caught in July/October on the west coast (Hordaland) has been investigated. This work is a continuation of an investigation started in 1954, the aim of which is the study of the seasonal variation in the weight composition of Norwegian tuna catches from year to year.

A tuna tagging experiment was carried out in September 1957. Twenty-two fish were tagged and released on the fishing localities west of Bergen. The Lea hydroststic tag was used in the experiment, and the tag was attached by means of a stainless steel harpoon, inserted into the muscles on the dorsal side. Only purse-seine caught fish were used, the weights of which were estimated to lie between 60 and 130 kg.

Angleterre, Pays de Galles, Ecosse, Irlande, Pays-Bas

Aucunes investigations en relation avec le Comité des Poissons Scombriformes.

Italie

Les recherches faites se rapportent exclusivement à la Méditerranée.

Portugal

Au Portugal on a commencé, en octobre, l'étude des conditions hydrologiques dans les Iles du Cap Vert comme premier pas pour l'étude de l'écologie des albacores et des patudos.

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Salmon and Trout Committee

1957

By G. Nikolsky

According to resolutions passed at the 45th Meeting of ICES information was collected in relation to the operation of salmon passes in the rivers. Relevant material was obtained from England, Ireland, Scotland, Netherlands, and USSR. Consultations were continued between the countries of the Baltic Sea as to the conservation of salmon in the Baltic.

No special salmon investigations were conducted in 1957 with the exception of a few surveys of the Baltic (hydrography, plankton, pollution) of importance to the study of the biology of salmon.

Denmark

(Knud Larsen)

(a) Tagging and marking experiments. In seven localities 13 stripped salmon and 421 sea trout, viz., 307 stripped fish, 107 spawning fish, and seven finnocks were tagged by means of celluloid tags.

(b) Analyses of the stocks of young trout and stationary trout by means of D.C. electrofishing were carried out in the upper course of the river Bredeå in southern Jutland.

(c) The sea trout run in the river Brønså was studied as usual in the fish pass at the Danish Trout Pond Farmers' Experimental Station.

(d) Analyses of the sea trout run as to age, sex, etc. were made in two experimental trout streams in southern Seeland.

(e) The investigations on the biology of *Coregonus lavaretus* in western Jutland were continued.

(f) Salmon investigations in the Baltic. Material for measurements, scale samples, etc. was supplied by intensified collections.

Greenland Salmon and Char (P. M. Hansen). See Distant Northern Seas Committee, p. 5.

France

(R. Vibert)

(a) **Recherches physiologiques et biologiques.** Les recherches entreprises sont poursuivies.

Les travaux de marquage de smolts commencés en 1951 ont été poursuivis. Il n'y a pas eu de nouvelles reprises de smolts au large de la Bretagne. Par contre les captures de saumons non marqués de toutes tailles (comprenant vraisemblablement un nombre de truites de mer) ont été fréquentes au large de la Bretagne. Les écailles de ces poissons sont en cours d'examen.

(b) **Propagation artificielle du Saumon.** Faible récolte d'œufs en décembre 1957 du fait des niveaux d'eaux défavorables.

(c) **Prises de Saumons.** Campagne exceptionnellement bonne en 1957 sur l'Adour, en particulier pour les saumons d'hiver. Très bonne pour les saumons de printemps.

Germany

(R. Kändler)

In the spring of 1957, 150,000 fry of sea trout were liberated in the Loiterau and Lippingau flowing into the Schlei and Flensburger Förde, respectively (western Baltic). Small quantities were liberated into the Schwentine flowing into the Kieler Förde, and in the Treene and other rivers on the west coast of Schleswig-Holstein.

The collection of statistical data on the drift-line salmon fishery in the south-eastern part of the Baltic was continued. The influence of meteorological and hydrographic factors on the catch, the size and age composition of the stock, and the food of salmon have been studied. Special attention is paid to the so-called "Jager", i. e., slender and lean fish with an abnormally low length/weight index. In this connexion, determination of the fat content of different parts of the body has been carried out.

These investigations included also the sea trout in order to elucidate its role in the drift-line fishery in the Gulf of Gdansk, and to compare the biological features of this fish here and in the western part of the Baltic, where a number of, mostly small, sea trout, but practically no salmon, are caught.

Iceland

(Th. Gudjónsson)

Marking and tagging of salmon and sea trout were continued along the same lines as in previous years. In the river Ulfarsá 174 salmon smolts were tagged with the smolt tags of the type used by the Migratory Fish Committee in Sweden and 57 smolts by cutting off two fins. 139 sea trout smolts were marked by fin-cutting.

In the river Ellidaár 60 salmon kelts as well as 15 sea trout kelts were tagged in April with Lea tags. 108 sea trout kelts were tagged in the river Ulfarsá in May with the same kind of tag. 22 sea char were tagged in October in the river Víðidalsá in northern Iceland.

Hatchery operations were carried out as in the

previous year and liberation of fry and one summer old salmon parr took place into several rivers. The salmon fishery was good in 1957.

Ireland

(A. E. J. Went)

Tagging of clean salmon in the sea was again carried out in June from commercial drift-net vessels from the port of Downings in County Donegal. Altogether 200 fish were tagged and 22 tags were recovered. Recaptures were made: 17 in rivers in County Donegal; three in the river Moy and one each in the rivers Bush and Bann in the North of Ireland. Kelts at a number of hatcheries were also tagged during the year and there was a number of recaptures of clean fish from the taggings of previous years. A report on the movement of salmon up the estuary of the river Shannon was also prepared and this will be published during the current year.

Material consisting of sets of scales and relevant data from salmon of the rivers Erne, Moy, and Corrib were examined during the year. Further material from the river Shannon was collected on the lines of that obtained continually since 1945. Officers of the Fisheries Division of the Department of Lands again collaborated with officers of the Ministry of Commerce, Belfast, in research into salmon and sea trout of the river Foyle and the reports have been published as appendices to the Foyle Fisheries Commission's Annual Report.

Figures for the catch of salmon and trout for 1957 are not yet available but the export of salmon amounted to approximately 800,000 kg compared with approximately 690,000 for 1956. As in the previous three years the grilse did not run in force until late June and the peak was in July when, as far as can be ascertained, the runs were very large. The earlier running fish were not, however, as abundant as the late running grilse. During the season conditions for the artificial propagation of salmon and trout were fairly satisfactory and the output of fry (in thousands) was: salmon, 1,733; sea trout, 150; and brown trout, 2,055.

The Salmon Research Trust of Ireland Incorporated which is being sponsored jointly by the well-known Dublin Brewers, Messrs. Arthur Guinness Son & Co. Ltd., and the Minister for Lands for Ireland opened a small research laboratory at Treanlaur, Newport, County Mayo on the Burnishoole river system. This laboratory has been named The Farran Laboratory after George P. Farran, delegate for Ireland to the International Council from 1925 until he retired in 1946.

Poland

(F. Chrzan)

During the drift-line fishery season measurements of length and weight were performed as well as determinations of sex and age of 956 specimens of salmon and trout. During the drift-net season the same examinations have been carried out on 459 salmon and 47 trout.

In autumn 1957 the tagging of 1,200 smolts was performed. The tagged smolts have been released in the Slupia and Balda rivers.

Institute of Inland Water Fisheries

The Institute of Inland Water Fisheries in Olsztyn is continuing its investigations of rivers and the lake Wdzydze as in previous years. Detailed data have been collected on the weight and number of sea trout caught in the Vistula river system and in the Bay of Gdansk. Measurements have been carried out on 1,280 specimens, caught in the mouth and the middle course of the Vistula as well as in spawning beds in the rivers Raba and Dunajec. Scales have been taken from a random subsample consisting of 343 individuals.

In 1957 the Institute of Inland Water Fisheries commenced observations on trout ponds in its new station at Oliwa near Gdansk; these observations included investigation of thermic relations, oxygen content in the water, and collection of data on bottom fauna and plankton, as well as samples of reared young fish in order to determine their growth-rate and natural food.

Within the frame of our study of streams as environment for young salmon and sea trout descriptions and measurements were made of the rivers Skawa and Drweca (the Vistula river system).

Department of Fisheries, University of Kraków

(S. Zarnecki)

(a) Scales were collected for the determination of the age and growth-rate of 600 sea trout, caught in 1957 in the estuary of the Vistula.

(b) Investigations on scales and gonads of salmon and sea trout, carried out in the year 1953 (fish caught in the mouth of the Vistula) have been prepared for publication.

(c) Material concerning the stage of development of gonads of adult sea trout has been collected in the spawning beds in the Upper Vistula.

(d) In order to investigate the downstream migration, two year-old sea trout smolts were tagged and liberated in spring 1957 (2919); in autumn 1957 (2125); and in spring 1958 (1640). They were released into the river Raba, a tributary of the Vistula.

Sweden

(B. Carlin)

The research on salmon in Sweden in 1957 has, as in previous years, been mainly directed on technical matters concerning the influence of hydroelectric power development on the salmon stocks and on methods for their conservation. The most important of these conservation methods is the rearing of salmon up to the smolt stage. Our production of salmon

smolts is rapidly increasing and new rearing stations have been built and others are under construction. The major problems in our research on rearing salmon are those concerning the diet composition and the disease control.

In connexion with these rearing experiments we have also continued our tagging experiments on a large scale. During the year 1957 we tagged 101,000 salmon smolts in the Baltic area and 2,500 on the west coast. Previously tagged salmon smolts yielded a return during the time from June 1957 to May 1958 of 2,190 adult salmon in the Baltic area. The total weight was 16 tons.

In addition we tagged during 1957:—

1,000 salmon kelts
330 sea trout kelts
242 clean salmon on the coast
136 sea trout on the coast.

The average return percentage of adult salmon from all tagging experiments in the spring of 1954 is now 10·3 %, and from the tagging in the spring of 1955 it is 11·3 %. The best individual tagging in 1955 has now given 23·7 % or 1,020 kg in 1,000 smolts. The smolts tagged in 1956 seem to give a much lower return, and there are some indications that the year-classes entering the Baltic in 1956 has had great losses during the early period of its sea life.

This year we have increased our research specially regarding the sea life of the salmon and on the population dynamics in the sea, and we should be very glad to have the co-operation of our neighbour countries in this research.

United Kingdom

I. England and Wales

(F. T. K. Pentelow)

Salmon and Sea Trout caught at Sea

During the 1957 season the collection of data on salmon and sea trout caught by commercial fishing vessels at sea has been continued and information on 74 fish has been received.

Salmon Experiment, River Axe, Devon

Construction of the permanent salmon trap at the upper tidal limit of the river Axe was begun in the autumn of 1957 and is still proceeding.

Salmon and Sea Trout Experiment, River Coquet, Northumberland

Salmon and sea trout kelts and smolts have again been trapped at Warkworth. The trapping took place for two weeks in December 1956 and from March to June 1957 and the smolts caught during the latter period were tagged with different types and colours of tags and also fin-clipped before release.

Salmon Stocks

Collections of salmon scales have been received from the Northumberland and Tyneside River Board and analysed.

Research on the Physiology of Salmon and Sea Trout

Dr. G. Howells, a Senior Treasury Research Fellow, has continued her work on osmoregulation in Salmonidae. The work is being carried out along three inter-related lines: the analysis of some inorganic constituents of salmon blood at different times during the freshwater and marine life; the study of salinity tolerances of salmon, brown trout, and rainbow trout; and the histological examination of gill tissues of these fish under various salinity conditions.

II. Scotland

(K. A. Pyefinch)

The census of migrating salmon on the Conon river system (Ross-shire), which is being conducted jointly by the Scottish Home Department and the North of Scotland Hydro-Electric Board, began during the year. Traps were erected at two points, on the river Meig a short distance below the Meig dam and on the river Conon a short distance below the Luichart dam; both came into operation during the spring. Apart from short periods, when they were out of commission due to floods, both traps fished continuously until mid-December, when a heavy flood damaged the Luichart trap. It has therefore been possible to obtain a reasonably accurate count of all ascending and descending migrants at the two sites; the results for the Meig site seem much more satisfactory than those for the Luichart site, where the number of smolts migrating downstream was unexpectedly small. The Conon river system is one which has been affected by hydro-electric developments and this census may prove to be useful in the projects now proceeding or being planned for assessing the effects of such developments on salmon rivers.

Traps have been erected on two of the tributaries of Lui Water (river Dee, Aberdeenshire) and counts have been made of fry, parr, and smolts leaving these streams. Neither trap, however, came into operation early enough to give a complete count of these migrants so that the results obtained are almost certainly incomplete. It is hoped that both traps will continue to operate through the winter and that next year a full record of downstream migration will be obtained. An impoundment trap was erected temporarily in the lower reaches of Lui Water and fish caught stripped for stocking the two tributaries. This year roughly 140,000 eggs were planted.

Observations on upstream and downstream migrations of salmon and sea trout have continued in the Cannie Burn (Aberdeenshire Dee). This year a count was made of the smolt migration and the counts of upstream and downstream adult migrants were con-

tinued. Further transfer experiments were carried out with sea trout. In these, sea trout caught in the trap near the mouth of the Cannie Burn were transferred, after tagging, to a number of points on the river Dee and its tributaries, both upstream and downstream from the Cannie and in roughly one-third of the fish transferred, the nostrils were plugged with cotton wool. Preliminary results indicate that the returns of untreated fish were generally similar to those of 1956, but that only a few of the treated fish made their way back to the Cannie Burn.

The statutory diagnostic services for furunculosis has been maintained and during the year ended 30. September 1957, 168 fish (mainly salmon, sea trout, and brown trout) were submitted for examination and of these 21 were found to be suffering from furunculosis, two probably had furunculosis but were so decomposed that the organism could not be isolated and 13 had died from Dee disease. Research work on salmonid diseases has been continued and has been principally concerned with the effects of various kinds of inhibitors on *Bacillus salmonicida* and further attempts to isolate the causal organism of Dee disease. Samples of ova and milt and blood samples from fresh run netted salmon have been examined for the causal organism of Dee disease, but no positive results have yet been obtained.

A further series of field fertilization experiments was begun during the year, when two lochs near Pitlochry and two lochs on the island of Islay were treated with calcium superphosphate. The lochs treated in 1957 seemed to be initially more productive than those treated in west Sutherland in 1954. Observations have been maintained on the latter and have shown that the bottom fauna populations probably reached a maximum in the spring of 1957 but have decreased later, although they are still greater than they were before fertilization. The scales collected during 1956 have been examined and show the increased rate of growth which has occurred following fertilization.

Work has been begun on the homing behaviour of trout, to discover the earliest age at which homing to the natal stream occurs, and some transfer experiments using trout 1+ years old were carried out during the summer. Preliminary results show a large proportionate return when fish are transferred to a tributary of the natal stream, but no returns when the fish are transferred to another stream. Some studies have also been made on the reactions of fish to various pool types during movement downstream. These show that fish escape readily from a pool in which the deepest part is at the head or the middle of the pool, but do not move at all readily from pools in which the deepest part lies just upstream from the outflow.

Observations have been maintained on the effects of increased cropping and the trout population of the loch in which these studies are being made was again reduced this year. Further observations have been made on the growth of trout in Loch Garry (Inverness-shire), which have shown that these trout are still growing rapidly, although terrestrial food (chiefly earthworms) has been much less conspicuous in the stomach contents. It seems likely that an increase in the bottom fauna population has enabled this increased growth-rate to be maintained.

A comparison of insect emergence during 1956 with that during 1957 shows that more insects emerged from the loch studied during the wet, cool summer of 1956 than during the dry, warm summer of 1957. Observations on the emergence of aquatic insects were continued during 1957.

The study of the value of the specific composition of phytoplankton populations as indicators of the trophic status of lochs has been concluded. Though the quotients, which can be derived from the analyses of specific composition, can provide useful indications of trophic state, it is not easy to derive accurate quotients because of the difficulty of specific determination in certain algal groups. An attempt is being made to solve this problem so that phytoplankton quotients can be used by the fisheries biologist who is not also an algologist.

Water samples from the Scourie lochs and from the lochs fertilized this year have been analysed, particularly with reference to their phosphorus content in various forms such as dissolved inorganic phosphate and organic phosphorus. The relationships between these various forms of phosphorus is clearly complex and a similar complexity evidently also exists between the various forms of phosphorus in the bottom deposits. In connexion with the latter analyses of a large number of samples of bottom deposits have been begun. The study of the rates of exchange of phosphate between the water and the other components of the aquatic system is being studied by means of the use of radiophosphorus.

Work has also been continued on the analysis of aquatic macrophytes for phosphorus content and experiments have been started on the effect of added sodium or potassium on the uptake of phosphate by macrophytes. Radiophosphorus is also being used in this investigation.

U.S.S.R.

(G. Nikolsky)

In 1957, the Polar Institute of Marine Fisheries and Oceanography carried out investigations as to determination of age, size, and sex composition of salmon and surveyed the nature of its migration in the Tuloma and Kola rivers (Bay of Kola in the Barents Sea) and in the Kolvits river (White Sea); other material necessary for assessment of the coefficients between the number of spawners, quantity of deposited eggs and strength of brood, was also collected.

Age composition of salmon in the Petchora estuary and in the area of Varzuga (White Sea) was observed by the workers of the Institute of Lake and River Fisheries.

Surveys of size and weight of spawners were made

on the spawning grounds in the Upper Petchora by the workers of the Petchora State Reserve.

Some information on size and fecundity of salmon in the Daugava river (Baltic Sea) was collected by the biologists of the Latvian Branch of the Marine Fisheries Institute of the USSR.

Simultaneously, investigations were continued with the aim of improving the methods of rearing salmon. The Institute of Lake and River Fisheries was engaged in:—

1. Study of survival capacity of young fish of different sizes, that had been artificially reared.

2. Evaluation of effectiveness of different food compounds for feeding the young.

3. Determination of the efficacy of forcible feeding of artificially reared young fish at early stages of their development.

At the University of Leningrad studies were carried out on the factors governing the processes of smoltification and desmoltification during detention in ponds. The conditions for the ripening of gonads were also investigated.

Routine observations were carried out by the inspectors of the protective service on all fish hatcheries on the conditions of development and on the process of migration.

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Shellfish Committee

1957

By H. A. Cole

CRUSTACEA

Belgium

(E. Leloup)

Crangon vulgaris. The biological study of the shrimp was continued. Its aim is to ascertain the annual evolution of the stock of shrimps on the Belgian coast.

Nephrops norvegicus. Measurements and percentage distribution of male and female Norwegian lobsters having different areas for origin and landed at the port of Ostend.

Denmark

(E. Ursin)

Studies on *Pandalus borealis* in Greenland waters and on *P. borealis* and *Nephrops norvegicus* in the transitional area were continued.

Studies on *Palaemon adspersus* were brought to an end. The results will be published in "Meddelelser fra Danmarks Fiskeri- og Havundersøgelser".

England and Wales

(H. A. Cole)

Homarus vulgaris. Batches of tail-punched and tagged lobsters were released along the south Cornish coast for the purpose of obtaining estimates of growth-rate and the intensity of fishing.

Comparisons of the performance of six variations of the Cornish-type pot were continued from Conway. Reports are in preparation on earlier trials made with other types of pots and on the Welsh lobster fisheries.

Cancer pagurus. To assess the fishing intensity on the Norfolk coast grounds 648 crabs were marked with plastic disks and released. Later a further batch of crabs was marked and released to give information on seasonal migration patterns.

Pandalus montagui. The distribution of pink shrimps during the winter on the grounds off the mouth of the Wash was studied by means of trawl samples. Recommendations were made for the conservation of pink shrimp stocks in Morecambe Bay based on the results of surveys.

France

(J. Furnestin)

Homarus vulgaris. Une mortalité anormale de homards a été constatée en Bretagne dans les viviers du Finisterre. L'étude faite à ce sujet a montré que cette mortalité était due au copépode parasite *Nicothoë astaci*.

Les homards ramenés dans les ports bretons provenaient non seulement des côtes bretonnes mais aussi des côtes marocaines, portugaises, anglaises, irlandaises et écossaises. Tous les individus examinés étaient parasités, le nombre de *Nicothoë* variait de 2 à 1031 pour un homard.

On a ainsi observé une extension importante du parasitisme déjà constaté il y a trois ans en Ecosse et ensuite à Roscoff.

L'expérience de repeuplement en homards de l'archipel molènais par immersion de femelles grainées dans un cantonnement a été poursuivie.

Germany

(P. F. Meyer-Waarden)

Crangon vulgaris. As in the previous years, the development of the shrimp fishery and the changes in the catch compositions (shrimps for human consumption, fodder shrimps, and additional catches) were investigated. The investigations dealt with all districts of the Waddensea fished by German shrimpers from Greetsiel to Wyk on Föhr. 447 samples of 5 kg each from the shrimp grounds of Greetsiel, Varelerhafen, Fedderwardersiel, Cuxhaven, Friedrichskoog, Tönning, Büsum, and Wyk on Föhr gave exact data of the seasonal and local differences in the shrimp catches and additional catches. Thus, it was possible to ascertain the proportion of undersized fish for human consumption in the shrimp catches.

Measurements of unsorted shrimps revealed the local and seasonal changes in the shrimp stocks of various fishing grounds. The investigations were completed by determinations of the content of dry substances, fat, ash, and chitin and of the meat- and shell-portions of different length groups of shrimps.

The selectivity of shrimp sieves was examined by means of various sizes of sieves.

Ireland

(F. A. Gibson)

Homarus vulgaris. Lobster studies were continued in 1957 along the lines suggested at the Conference on the subject in London in January 1957. Information of the catching power of creels was collected, together with data about the nature of catches at various centres. Storage conditions for lobsters and crawfish were studied, and an experimental high density storage unit was constructed and operated. Two tagging operations were carried out.

Netherlands

(P. Korringa)

Homarus vulgaris. In the lobster pounds at Yerseke an unusual mortality was again observed early in the summer season. Bacteriological investigations revealed that a micro-organism, *Gaffkya homari*, abounded in the blood of weak and dying lobsters, whereas it could not be detected in the blood of healthy lobsters. Infection of healthy lobsters with blood taken from diseased specimens led to a rapid development of the disease called Gaffkaemia. This under laboratory conditions and at temperatures over 15° C. The disease leads readily to the death of the lobsters. Though *Gaffkya* reared on artificial culture media appeared to be sensitive to penicillin and to some other antibiotics, efforts to cure infected lobsters by injection with penicillin or by adding penicillin to the water in which the lobsters were kept, were not successful. Gaffkaemia outbreaks in lobster pounds have not been observed at water temperatures under 10° C. Refrigeration of the water to a level of some 7° is thus far the only effective method to control this disease.

Scotland

(H. J. Thomas)

Homarus vulgaris. A pamphlet entitled "Lobster Storage" setting out the factors involved and describing various methods of medium and long-term storage has been published.

A comprehensive survey of the lobster and crab fisheries in Scotland has been completed and this is now to be published.

The complete returns of marked lobsters released off the south-east coast have been analysed and a paper incorporating these results is under preparation.

An analysis of the seasonal variations occurring in commercial landings of lobsters has been carried out.

Further investigations into the occurrence, biology, and histology of *Nicothoë astaci* have been undertaken.

A preliminary investigation of a turbellarian, occurring in the gill chamber of lobsters and apparently browsing on the gill filaments, has been initiated.

Nephrops norvegicus. A number of samplings giving seasonal coverage in the biological investigation of the stocks of Norway lobsters occurring in the Firth of Forth have been undertaken.

Sweden

(H. Höglund)

Nephrops norvegicus. During 1957 some 10 samples from different parts of the Skagerak comprising about 1500 specimens of Norway lobster have been analysed as to length, sex, and shell condition.

MOLLUSCA

Belgium

(E. Leloup)

Oysters. Activity during 1957 included a study on the rate of growth of the oysters cultivated in the sluice-dock (Bassin de Chasse) at the port of Ostend and collaboration towards the establishment of a method of sanitary control of shellfish.

Mytilus edulis. As during previous years, investigations were carried out during May and September on the mussels living on the coastal defences along the Belgian coast from Knocke to La Panne in order to ascertain the degree of infection of the mussels by *Mytilicola intestinalis.*

Denmark

(E. Ursin)

The investigation of the biology and specific characters of *Cardium* in estuarine localities was continued. A report will appear in "Meddelelser fra Danmarks Fiskeri- og Havundersøgelser".

England and Wales

(H. A. Cole)

Oysters. Further studies were made of the factors controlling the production, growth, and setting of oyster larvae in Essex estuaries. Particular attention was paid to the quality and abundance of flagellates suitable as larval food.

The use of copper sulphate solutions for freeing oysters from juveniles and spawn of *Urosalpinx* and young *Crepidula* was examined in a series of trials. Experimental studies were made of the feeding of *Psammechinus miliaris.*

At Conway tank breeding of oysters continued and the laboratory rearing technique was further developed. Problems encountered in the mass production of *Isochrysis* for feeding oyster larvae were overcome by the use of a synthetic culture medium.

Mya arenaria. Surveys were made of stocks of clams in estuaries of the south-east of England and in Morecambe Bay. Studies were made of growth-rate, breeding, and larval life. Preliminary trials were set up to evaluate damage by *Carcinus.*

Mytilus edulis. Surveys were made of stocks of mussels in Morecambe Bay with special reference to a fuller use of the frequent falls of spat. At Conway further development work was done on dredges of special pattern.

Cardium edule. Surveys of the major cockle beds in England and Wales were completed and an assessment was made of the importance of various environmental factors in limiting growth and survival.

Measurement of the predation of oyster catchers (*Haematopus ostralegus*) on cockles and mussels was extended by field observation and trials with captive birds.

Buccinum undatum. Marked whelks were liberated at Whitstable to assess stocks and the extent of their exploitation. Laboratory and field studies have been made on the biology and habits of whelks to obtain background information required in population work.

Pecten maximus. Surveys were made of escallop beds in the area between Plymouth and Falmouth. Further comparisons have been made between sledge dredges and those of conventional pattern. Population studies have continued of small beds in Holyhead Harbour.

France

(J. Furnestin)

Huîtres. Les observations systématiques sur les conditions météorologiques et hydrologiques des régions ostréicoles ont été poursuivies. De nouveaux lancers de flotteurs ont été effectués en Gironde et en Seudre pour l'étude des courants superficiels.

La croissance des huîtres plates et portugaises de diverses origines a été étudiée en relation avec la fertilité des eaux, exprimée en taux de matière organique dissouté. Croissance et teneur en matière orga-

nique semblent varier dans le même sens, notamment en claires.

Des recherches ont été entreprises sur le cycle sexuel de *Gryphaea angulata* Lmk. dans le bassin d'Arcachon; il a été montré qu'une même huître peut pondre au moins deux fois au cours de l'été, les ovocytes diminuant de taille au cours de la période d'activité sexuelle. Sur les côtes nord de Bretagne, les gonades de cette espèce évoluent jusqu'au stade de maturité mais la ponte n'intervient pas obligatoirement.

La ponte des huîtres plates et des huîtres portugaises a débuté en 1957 plus tôt qu'elle ne l'avait fait en 1956. Les larves d'*Ostrea edulis* L. étaient trouvées dès le 7 mai à Arcachon et dès le 22 mai dans le Morbihan; le premier maximum eut lieu les 12 et 13 juin dans ce dernier centre. Les larves de gryphées ont montré un premier maximum le 13 juin en Seudre et le 20 juin à Arcachon, en avance de 3 et 4 semaines sur les dates de 1956.

L'importance des fixations d'huîtres plates a été très différente selon le centre considéré: bonne à Arcachon et dans les rivières de Crach et de Plouharnel, elle fut très faible en rivière d'Auray, des marées de vive-eau ayant entraîné une dispersion considérable des larves parvenues au terme de leur vie planctonique.

Les fixations d'huîtres portugaises ont été très fortes en Charente et à Arcachon; bonnes en juillet en Vilaine, elles furent faibles ensuite.

L'inventaire du stock des gisements naturels a été poursuivi ainsi que la mise en valeur de terrains d'élevage nouveaux.

Moules. Les fixations de naissains, bonnes en Morbihan, en Charente et dans l'Adour, ont été faibles ailleurs.

Le laboratoire de La Rochelle a poursuivi l'étude de la croissance des moules; on a noté une pousse déficitaire sur les individus nés en 1956.

Des essais de culture sur cordes et sous radeaux ont été effectués en Charente; le naissain s'est fixé facilement et a manifesté une croissance rapide, atteignant une taille de 40 mm en octobre contre 29 mm pour le naissain fixé sur bouchot.

La résistance des cordes en matière plastique, pour la culture de la moule, a été éprouvée à La Rochelle et à Thau. Seul, le prix plus élevé de ce matériau peut en limiter l'emploi.

Mytilicola intestinalis Steuer progresse lentement au sud de la Bretagne; il a été découvert en 1957 sur la rive gauche de la Loire. Il avait été trouvé dans le fleuve en 1955.

Contrôle sanitaire. Les recherches sur la bactériologie des coquillages, faites au laboratoire de St. Servan, ont principalement porté sur les conditions de prélèvements, la répartition des germes dans les coquillages et sur l'application de quatre méthodes de colimétrie utilisant respectivement un bouillon phéniqué, un bouillon lactosé et bilié additionné de vert brillant, une gélose lactosée et biliée additionnée de rouge neutre, une membrane filtrante sur un milieu sélectif.

Il a été notamment constaté que les germes indologènes dénombrès par le procédé habituel au bouillon phéniqué sont de véritables *E. coli* dans la proportion de 95 % environ en moyenne. Le procédé à la membrane peut donner des renseignements interéssants mais n'est pas applicable dans tous les cas. Le bouillon au vert brillant est d'un emploi général pour les coquillages comme pour les eaux.

Germany

(P. F. Meyer-Waarden)

Mytilus edulis. Growth and quality (meat content) of wild and cultured mussels from different places and at different seasons were investigated. At the same time the various stages of the *Mytilicola intestinalis* attacking the *Mytilus edulis* were continuously investigated. The investigations should also help to establish a basis for the extension of mussel cultivation.

Gryphaea angulata. Re-planting experiments with Portuguese oysters were carried out in the North Sea near Norddeich in spring 1957. It proved that growth and increase in weight were normal in the East-Friesean Waddensea, and that the Portuguese oyster also survived the winter of 1957/58. It is remarkable that the natural green colour of the meat gradually faded.

Ireland

(F. A. Gibson)

Oysters. Studies of the oyster beds in Clew Bay, on the west coast of Ireland, were continued during the year.

Pecten maximus. Data relating to escallop populations in three closely associated bays in the west of Ireland were obtained.

Mytilus edulis. Surveys of mussel stocks were carried out on the south coast of Ireland, and data of the incidence of *Mytilicola intestinalis* collected.

Netherlands

(P. Korringa)

Oysters. Bulletins announcing setting prospects have been issued throughout the summer season. Setting was good from about 25. June up to 10. July, and again of appreciable importance late in July. The oystermen collected a good crop of spat with tiles and mussel shells.

Water samples collected in both the western district (Zieriksee) and in the Basin of the Oosterschelde (Yerseke) were analysed on a weekly basis. The data thus obtained led to a better insight in the factors influencing growth and fattening of oysters. The fluctuations observed in the condition index of oysters in different parts of the Zealand waters could be explained in terms of variations in the amount of available food. Efforts have been made to eliminate

the factor "bottom conditions" in studying growth and fattening of oysters.

Experimental rearing of oyster larvae has been continued in the Wemeldinge field laboratory. Various batches of oyster larvae have been reared with success and the spat obtained showed an almost normal growth in the laboratory since feeding could be improved. High air temperatures in summer made it difficult to rear sufficient quantities of *Isochrysis*, the best laboratory food for oyster larvae. To ensure a regular supply of food it is considered necessary to keep the temperature in the rearing house under strict control.

Observations on the occurrence of shell disease were carried out in the summer season. High water temperatures early in July (i.e., temperatures of 19°C and over for more than 10 days in succession), led to a slight outburst of shell disease. Limited quantities of young oysters only ran the risk of becoming infected, since tray rearing in the "dangerous" area near Yerseke was practised on a small scale only in the year 1957. Moreover, a considerable part of the spat was not detached from the tiles before the month of August, this because of its small size during hibernation, brought about by the unusually late setting in the year 1956. Thus the majority of the young oysters escaped from becoming infested with shell disease.

Mussels. Observations on setting of mussels on various types of collector material, attached to rotating frames for longer or shorter periods, have been carried out in the Waddensea. The results of this work do not yet offer a very clear picture of the various factors involved in mussel setting. Efforts on technical scale with old herring drift-nets and straw rope as collector material did not lead to success in mussel seed collection in the year 1957.

Observations were made on seasonal fluctuations in the production of eggs and sperm and in condition index in the same mussels on some plots in the Waddensea.

Since January 1957, the Fisheries Laboratory at Bergen-op-Zoom no longer serves as a centre for shellfish research. Dr. P. Korringa has been called to the IJmuiden headquarters to take over from Dr. B. Havinga, who retired as Director of Fisheries Research. No other biologist has been appointed to replace Dr. Korringa at Bergen-op-Zoom. Shellfish research will henceforth be carried out in the Wemeldinge field laboratory and at IJmuiden (e.g., Waddensea investigations, spatfall forecasts). Bacteriological work on shellfish sanitation will, however, be continued in the Bergen-op-Zoom laboratory.

Scotland

(R. H. Miller; H. J. Thomas)

Oysters. Experiments have continued on the growth and fattening of French oysters relaid in selected areas.

The breeding and growth of oysters, and the physical and biological conditions, were followed during 1957, the third year of the field experiment in West Loch Tarbert, Argyll. Breeding was very unsatisfactory.

A scheme has been started to improve the commercial oyster fishery in Loch Ryan, Wigtownshire, which has in recent years become uneconomic owing to the depletion of stocks through overfishing. A preliminary survey of the beds showed a small breeding stock of large oysters, but a relatively good stock of young oysters, indicating that physical and biological conditions are still satisfactory in Loch Ryan, for breeding oysters. The condition of the oysters was very good, and growth appeared to have been satisfactory.

Pecten maximus. Observation on the age, growth, and breeding of the scallop (*Pecten maximus*) have been written up for publication in J. mar. biol. Ass. U. K.

Sanitary Control and Shellfish Purification

Further comparisons were made of the methods used in France, Canada, U.S.A., and Britain for the bacteriological examination of shellfish.

The value of the membrane filter method for the examination of sea water was examined in comparisons with the standard roll-tube technique.

A pilot-scale plant for the cleansing of shellfish, using ultra-violet light for sterilization of the sea water, has been developed and has given satisfactory results.

Further simplification has been made in the Conway technique for the cleansing of mussels. Basic studies have been completed of the behaviour of mussels in lightly polluted water at various levels of initial pollution and temperature.

Nanoplankton Systematics and Biochemistry

The first portion of an introductory account of the smaller algae of the British coasts is now ready for publication. It embraces the mobile monads of the Chlorophyceae and reference is made to all those species, described from within the International Council's area. A start has been made with the description of the Cryptophyceae and Euglenineae.

The biochemical investigation of unicellular algae of known value as food for marine larvae has been continued. Those species receiving attention include *Monochrysis lutheri*, *Isochrysis galbana*, *Hemiselmis vivescens*, and *Dunaliella tertiolecta*.

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Laboratory Leaflet No. 15, The Baird Sledge Dredge and its Handling.

Hydrographical Committee

1957

By G. Böhnecke

Belgium

(E. Leloup)

"West-Hinder" Lightship

(a) A water sample was collected once a week for the determination of the surface temperature, Cl, salinity, and alkalinity.

(b) Once a week, two large water samples were collected for complete chemical analysis—Cl, salinity, alkalinity, sulphates, calcium, and magnesium.

Fishery Research Vessel "Hinders"

(a) The following observations were made on the line Gravelines—Deal (Stations B 13, 14, 15, and 16) and off the Belgian coast (Station B 22, off Nieuport).

Once a month from January to August:—

1. Water samples were collected at the surface (1 m), at the bottom, and at 20 and 40 m, where the depth sufficed (temperature, Cl, salinity, and alkalinity).
2. A water sample was collected at 20 m at each station for complete chemical analysis (Cl, salinity, alkalinity, sulphates, calcium, and magnesium).

(b) Whenever the "Hinders" was at sea for experimental fishing, surface water samples were taken at various positions off the Belgian coast.

The results of the analysis of the water samples were communicated, as regularly as possible, to Mr. Jens Smed, Hydrographer of ICES at Copenhagen, for the monthly charts of surface tempera-

ture and salinity, wind and current of the North Sea and English Channel, and also for publication in the *Bulletin Hydrographique*.

Denmark

(H. Thomsen)

Cruises. From the "Biologen" observations of t° and S $^0/_{00}$ and occasionally of O_2 were made in the Kattegat and the Belts in periods from April to December. In the Baltic near Bornholm observations of t, S, and O_2 were made in the middle of August.

In the Skagerak hydrographical observations were carried out from 5. to 12. April by the "Dana".

In the North Sea two extensive hydrographical surveys (t, S, and occasionally O_2) were made by the "Dana" during the periods 14. April to 23. May and 21. August to 28. September. From 16. to 17. July the "Jens Væver" occupied hydrographical stations in the eastern part of the North Sea.

The Shetland-Faroe section was run by the "Dana" on 3. and 4. June. In the Atlantic Ocean around the Faroes and especially in the waters north of these islands hydrographic investigations comprising t, S, and P were carried out from 4. to 28. June.

The section along Lat. 62°N from the Faroes to Greenland was run between 28. June and 3. July.

In July the "Dana" worked in the Davis Strait and completed the routine sections. From 9. to 18. August the section Cape Farewell to Ireland was worked.

In the coastal waters off West and South-East Greenland the cutters "Adolf Jensen" and "Immanuel" worked throughout the year. Observations of t and S were made at a fixed station near Godthaab approximately once per month.

Observations from Liners. Surface samples were collected from liners on the routes Skagen—Greenland and Esbjerg—Grimsby/London.

Observations from Lightvessels and Coastal Stations. Regular hydrographic observations have been made by the Danish Meteorological Institute as follows:—

1. Daily observations of t and S from 12 lightvessels and 20 coastal stations.
2. Four-hourly estimations of the surface current from 12 lightvessels.

England

(A. J. Lee)

Fisheries Laboratory, Lowestoft

In the Barents Sea the following sections were worked (the figures in brackets indicate the months):

West Bear Island (5, 8, 12); East Bear Island (5, 8, 12); Fugløy-Bear Island (5, 8, 12); Malangen (4, 8, 11); Vardø-Eastern Basin (12); North Cape (5, 9); Kongsfjord (5); Bear Island Channel westwards (5).

Observations for the study of the relationship between environmental conditions and the distribution of cod were made throughout the year. Experimental work was done on the measurement of currents by towed electrodes and by jelly-bottle devices, on the recording of temperature against depth, and also on the determination of pH and alkalinity.

In the North Sea surveys were made during the period January/April in connexion with plaice egg investigations: temperature, salinity, phosphate, and turbidity were sampled and drift-bottles were released. Temperature and salinity observations were made in connexion with plankton studies between the Firth of Forth and Smith's Knoll in June, between Flamborough Head and Orfordness in October, and on the Flamborough Line during the period April/September. Temperature observations were made in connexion with herring investigations to the east of the Dogger Bank in July, and off Whitby in August.

The routine observations of the temperature and salinity of the surface waters round the British Isles from commercial vessels, lightships, and weather ships were continued.

National Institute of Oceanography, Wormley

Studies of the water circulation below the Gulf Stream made in collaboration with the Woods Hole Oceanographic Institution revealed a layer of little horizontal movement at about 1,500 m and a southward counter-current of as much as $^1/_3$ knot at greater depths. This and similar work has already done much to stimulate theoretical and practical studies of ocean circulation. In further collaboration with Woods Hole three lines of stations were worked across the Atlantic Ocean in 24, 32, and 48°N. The data are published in a joint report, WHOI reference no. 58—30. Measurements of electrical conductivity were used for salinity determination and listing of the results to 0.001 $^0/_{00}$, including measurements made by both Woods Hole and N.I.O. apparatus on one cruise, will help to assess the usefulness of the new method.

Basic studies have been continued on the interchange of energy between the atmosphere and oceans, waves and ship movement, storm surges, the statistics of the sea surface, ocean circulation and the sea floor. The Annual Report for 1957/58 is in press and the published papers have been given additional circulation in a volume of collected reprints.

Oceanography Department, University of Liverpool

Regular observations of surface temperature and salinity at nine stations in the Irish Sea were continued.

Further work has been done on the chemistry of trace elements in sea water, marine organisms, and sediments. Work on germanium and gallium has been completed, and studies of antimony, cerium, zirconium, and thorium are in progress.

The recordings of flow through the North Channel

and across the Holyhead-Dublin sections, obtained from submarine telephone cables, were continued. Three hydrographic sections across the North Channel were worked in July from the "William Herdman".

Further investigations of the turbulent flow in tidal currents were carried out in the Red Wharf Bay area, off Anglesey.

Marine Biological Association, Plymouth

The monthly cruises to International Hydrographic Station E 1, 50°02′N, 4°22′W, were maintained during 1957. Measurements were made of inorganic phosphate, total phosphorus, and silicate. Some measurements were made on ammonia and nitrate. Sampling for biological purposes was co-ordinated with the hydrographic programme.

Finland

(Ilmo Hela)

Cruises. Oceanographic work on board the research vessel "Aranda" was carried out from 2. June to 30. August. The programme consisted of the following periods, from 2. to 19. June hydrographic-chemical and marine paleogeological studies in the Baltic Sea; from 29. June to 27. July work in the Barents Sea and north of Spitsbergen, consisting of eight hydrographic-chemical sections, plankton sampling, CO_2 exchange studies, marine geological investigations, and gravimetric measurements at sea; from 12. to 30. August fisheries and pollution studies in the Baltic waters near Finland, with limited hydrographic observations.

Observations from Liners. Surface temperature and salinity observations were made on board one liner on the Helsinki-Copenhagen route.

Observations from Coastal Stations and Lightships. Hydrographic observations were made at 24 fixed stations (temperature and salinity), of which four were established mainly for studying the migration of the Baltic herring, and at four lightships (temperature, salinity, wind, and current). Sea level was recorded at 14 tide-gauge stations and at 10 tide-pole stations. Ice observations were carried out at 75 ice stations, on six ice breakers, on aeroplanes, and on board the Finnish winter liners. Chemical ice sampling at 7 stations; mechanical studies of sea ice. Sampling of air was made at six air chemistry stations.

France

(J. Furnestin)

I. Institut des Pêches Maritimes

Le navire océanographique "Président-Théodore-Tissier" a travaillé du 1er mars au 17 mars 1957, sur le banc Porcupine (ouest de l'Irlande) et au sud de ce haut-fond; ainsi que sur les routes aller et retour de cette région à Brest.

Au cours de 63 stations, ont été effectuées 146 prises de températures, déterminations de salinité, de la teneur en oxygène, en phosphates et en silice, à diverses profondeurs.

Du 22 mars au 23 avril 1957, le navire océanographique a exploré le plateau continental celtique entre le Cap Clear, les Small's, la baie de Plymouth, Brest, le haut-fond de la Chapelle, la Petite Sole et la Grande Sole.

Pendant ce mois, 228 relevés de température et analyses d'eau (salinité, oxygène, phosphates, silice) ont été effectués.

Du 27 mai au 13 juin 1957, le "Président-Théodore-Tissier" a fait des stations hydrologiques au large de la Péninsule Ibérique, du Cap Finisterre au Détroit de Gibraltar, en effectuant notamment des sections perpendiculairement à la côte portugaise au large de Porto et des Iles Berlingues, jusqu'au 13°W.

Mêmes relevés, prélèvements et analyses que précédemment jusqu'à 2.000 m.

Le "Président-Théodore-Tissier" a, de la mi-juin à la mi-août travaillé dans la partie occidentale de la Méditerranée, de la latitude de Gibraltar au sud, jusqu'aux eaux de la Corse à l'est, y faisant 125 stations hydrologiques, dont 43 à plus de 1.000 m de profondeur.

Le "Passeur du Printemps" armé par le CREO a effectué en juillet/août 33 stations hydrologiques en Mer d'Alboran.

Du 1er novembre au 7 décembre le même navire a étudié l'hydrologie de la Manche (plusieurs sections hydrologiques) et du sud de la Mer du Nord jusqu'au banc du Sandettié. Environ 150 prises de températures et prélèvements d'eau ont été effectués au cours de cette campagne dont le but principal était le marquage de harengs.

Deux bateaux-pilotes-de-pêche ont le long des côtes du Golfe de Gascogne (de juillet à septembre) relevé les températures sur les lieux de pêche à la sardine.

II. Marine Nationale

"Aventure". Dans l'Atlantique Nord, la frégate l'"Aventure" a contribué à l'étude internationale du Front Polaire Nord, en exécutant en août 1957 une coupe hydrologique de 9 stations dans le Détroit de Davis et en octobre 1957 une coupe de 22 stations entre Terre-Neuve et Brest dont 8 poussées jusqu'à des profondeurs dépassant 3.000 m.

"Ailette". L'aviso garde-pêche "Ailette", au cours de sa campagne annuelle de surveillance des pêches à procédé à des observations hydrologiques de surface en Atlantique Nord, Mer d'Irlande, Manche, Mer du Nord et Mer Baltique.

Escorteurs du Maroc, "Le Ruse" et l'"Eveille". Du 29 avril au 2 mai 1957 et du 7 au 10 mai, "Le Ruse" et l'"Eveille" ont effectué entre le Cap Cantin et Madère ainsi qu'au large du Cap Sim, 24 stations hydrologiques profondes dont 5 poussées au delà de 2.000 m.

Ces escorteurs ont pratiqué en août entre le Cap Cantin et Madère, puis entre Mogador et les Iles Canaries, 19 stations profondes dont 4 poussées au delà de 2.000 m.

En novembre ils ont fait en outre 16 stations hydrologiques sur le plateau continental marocain dans le sud-ouest de Gibraltar.

Escorteurs de Brest, "La Surprise" et "La Croix de Lorraine". "La Surprise" a effectué la mission hydrologique systématique à l'ouvert de la Manche à la fin de janvier 1957. "La Croix de Lorraine" a repris ce même circuit vers le milieu d'août 1957. 44 échantillons d'eau de mer ont été prélevés en surface.

III. Centre National de la Recherche Scientifique

La "Calypso" a fait en juillet, août et septembre entre Brest, les Açores, Madère et les côtes d'Europe et d'Afrique 59 stations hydrologiques dont 23 poussées jusqu'à 4.000 m d'immersion (1.794 échantillons ont été recueillis).

IV. Météorologie Nationale

Les frégates météorologiques françaises "Le Verrier" et "Mermoz" ont fait des prélèvements d'eau et des relevés de températures en surface sur les trajets aller et retour et aux points: "Alfa" (62°N, 33°W) de la mi-février à la mi-avril, et en septembre et octobre; "Juliette" (52°30'N, 20°W) de janvier à la mi-février et en août; "Kilo" (45°N, 16°W) de la mi-avril à la fin juillet et en novembre et décembre.

Germany

(G. Böhnecke)

Biologische Anstalt Helgoland [1])

Bottom and surface temperatures were measured at 34 stations in the course of a cruise with the R/V "Anton Dohrn" from 26. June to 5. July in the central and southern North Sea. Further observations were made during cruises with the R/V "Uthörn" in the German Bight. Near List, Isle of Sylt, sea surface temperatures were measured daily, and salinity at 14-day intervals. In List harbour observations of temperature, salinity, oxygen content, and pH near the surface were made at 10-day intervals.

Deutsches Hydrographisches Institut

Lightships. The positions and the programme of regular observations of the eight German lightships —three in the western Baltic and five in the German Bight—are the same as last year. The observations made during the year 1956 were published in the form of a year-book, completed by the monthly and yearly mean temperature and mean salinity of the years 1948/1956 ("Beobachtungen auf den deutschen Feuerschiffen der Nord- und Ostsee etc." in Meeresk. Beobacht. u. Ergebn., No. 10, Dtsch. Hydrogr. Inst., Hamburg, 1957). Results of hydrographic surface observations of the eight German lightships and results of wind and current measurements on the lightship "Fehmarnbelt" in the western Baltic were given regularly in 1957 to the Service Hydrographique for use in the Synoptic Hydrographic Charts.

Liners. Surface samples were collected about six times a month from liners on the route Hamburg-Hull.

Cruises. During 1957 three cruises for oceanographic work were undertaken with the survey- and research ship "Gauss".

(a) In May in the western Baltic. Hydrographic-chemical investigations were carried out.
(b) In June/July in south-western Icelandic waters. The distribution of temperature and salinity was investigated.
(c) In September/October in Norwegian waters. The main objects were operational testing of the instruments to be used during the planned cruises in the International Geophysical Year 1957/58, together with training of assistants.

Deutsche Wissenschaftliche Kommission für Meeresforschung

During 1957 six cruises were undertaken by "Anton Dohrn" on which hydrographic investigations were carried out:—

(a) In January/February in the Skagerak region and in the northern North Sea. The stratification was investigated.
(b) In February/March in Norwegian waters. The hydrographic conditions were investigated at 50 stations.
(c) In March/April in the Denmark Strait. The overflow of the Greenland-Iceland Ridge and internal waves were observed.
(d) In June/July in the German Bight. The hydrographic conditions of the bottom water were investigated.
(e) In September/October in the southern and central North Sea. The hydrographic conditions and the distribution of the summer discontinuity layer were observed.
(f) In November/December in Norwegian waters. Operational testing of instruments for the cruises during the International Geophysical Year 1957/58 was carried out. At 78 stations internal waves, current conditions on the fishing grounds, and other hydrographic conditions were investigated.

Institut für Meereskunde der Universität Kiel

Serial observations of temperature and salinity were made during the cruise of R/V "Südfall" in Kiel Bay, Great Belt, and Little Belt in June (24.—26.) in connexion with biological research work.

Routine hydrographical observations were continued at monthly intervals at three stations in the Kieler Förde, and daily surface water samples were taken in Kiel harbour.

[1]) **Cruises.** During the cruises of "Anton Dohrn" in the Irminger Sea and Denmark Strait from 27. March to 27. April, determinations of the content of organic carbon, chiefly present as dissolved organic matter, were carried out.

Iceland

(U. Stefánsson)

Cruises. Hydrographical and chemical surveys were made in the waters around Iceland in the periods 11. to 30. April, 28. May to 1. June, and 4. to 23. June.

In August three sections north of Iceland were repeated, one of them twice.

In connexion with trawling experiments carried out from late July to late August, hydrographical and chemical sections were worked in three fjords, west, north, and east of Iceland, respectively.

BT observations were made throughout the summer on the north and east Icelandic herring grounds.

From 11. November to 1. December several hydrographical stations were worked south-east of Iceland.

Records of the Sea Surface Temperature were obtained as in previous years by means of thermographs installed in three ships, one running from Reykjavik to New York and two coastal liners, one running the whole year and the other during the winter months.

Ireland

(A. E. J. Went)

During 1957 the only hydrographical work carried out was the collection of the usual surface temperature twice daily at the Conigsbeg lightship. These data have been forwarded to the Service Hydrographique.

Italie

(M. Picotti)

Le programme de la Sous-Commission océanographique comprend la distribution de douze stations fixes pour le contrôle journalier de la température et de la salinité. De ces stations fonctionnent déjà régulièrement celles de Imperia, Portofino, Livorno, Ischia, Civitavecchia, Ustica, Porto Torres et Carloforte (Sardegna), Fano, Chioggia et Trieste. Sous peu fonctionneront aussi d'autres stations: une à Capo Passero de Sicile et, sur le Continent Italien, aux stations déjà en activité, on ajoutera encore une à Otranto et une autre tout près du Gargano, dans la mer Adriatique. Toutes les stations ont été confiées à la surveillance de l'Institut Expérimental Thalassographique de Trieste, qui a fourni le matériel nécessaire pour leur fonctionnement, et qui inspecte, à des intervalles réguliers, chaque station, afin d'assurer une activité diligente et précise. On commence déjà à recevoir des données numériques et des échantillons d'eau marine pour une exacte compilation des résultats.

La Sous-Commission océanographique et la Marine Militaire ont aussi employé des bateaux nécessaires pour effectuer les croisières dans les mers Tirreno, Adriatico méridional et Jonio. La première croisière a eu déjà lieu, initiée le ler juillet, et elle a été effectuée avec trois corvettes de la Marine Militaire Italienne: "Flora", "Scimitarra" et "Pomona", qui ont eu pour zone de recherches le haut, le moyen et le bas Tirreno.

Pendant cette première période de croisière (qui a duré 15 jours), on a pris des mesures de température, salinité, alcalinité, oxygénation de l'eau, concentration du pH ainsi que des mesures avec le bathythermographe.

Pendant la deuxième moitié du mois de septembre une deuxième croisière a été accomplie dans les mêmes zones et avec le même programme.

Les observations des ondes longues, des vagues et des houles ont été confiées aux Instituts de Genoa, Trieste, Livorno et Cagliari.

Selon une proposition de l'Institut Thalassographique de Trieste, une révision du réseau maréographique national à été effectuée au cours d'une inspection aux diverses stations. On les a classifiées selon les diverses catégories et tenues en précise fonction, de manière que les observations recueillies puissent servir à la détermination du niveau stérique marin tout près des maréographes.

Une des tâches principales dont la Sous-Commission océanographique s'est chargée à part des croisières citées ci-dessus est celle d'obtenir des mesures précises de température et de salinité, avec lesquelles il sera possible d'employer la méthode Bjerknes pour le calcul des courants.

Netherlands

(P. Groen)

Koninklijk Nederlands Meteorologisch Instituut Afdeling Oceanografie

1. Surface temperatures and salinities in the North Sea from liners on the routes Hoek van Holland—London and IJmuiden—Great Britain (Hull and other east coast ports) once a week.

2. Three-hourly observations of surface temperatures and salinities on all voyages to and from Ocean Weather Stations and daily observations during stay at the station.

3. Three-hourly surface temperatures and hourly current measurements by vertical log at 6 m depth at the lightvessels "Terschellingerbank", "Texel", "Goeree", and "Noord Hinder" and comparative current measurements at various depths at the lightvessels "Texel", 21. to 28. May; "Noord Hinder", 17. to 25. June; and "Goeree", 2. to 9. July.

4. Subsurface serial hydrographic observations at Ocean Weather Station J during May.

Subsurface serial hydrographic observations at Ocean Weather Station I during October.

5. Sea sampler and bathythermograph observations at Ocean Weather Stations.

Rijksinstituut voor Visserij Onderzoek

1. Daily salinity measurements were made from the lightvessels "Goeree", "Noord Hinder", "Texel", and "Terschellingerbank".

2. Hydrographic observations were made on fishery research cruises with "Willem. Beukelsz" in the southern and central North Sea.

Rijkswaterstaat

1. Hydrographic observations in estuarine waters.
2. Wave measurements in coastal waters.
3. Measurements of currents and lateral eddy diffusion by means of surface and subsurface floats off IJmuiden.

Zoölogisch Station (Den Helder)

1. Hydrographic observations in the Waddensea, comprising studies on the transport of suspended matter, the relation between water movement and bottom composition, and the production of organic matter.
2. Investigations concerning the concentration and properties of dissolved organic matter in the sea.

Royal Netherlands Navy

Bathythermograph observations on various cruises.

Norway

(J. Eggvin)

Directorate of Fisheries, Institute of Marine Research

Cruises. During 1957, 18 cruises were undertaken by "G. O. Sars", "Oscar Sund", "Krill", and 5 chartered vessels.

Hydrographic investigations were carried out in Norwegian coastal waters each month of the year, in the Barents Sea in March, April, August, September, October, and November, in the Norwegian Sea in January, May, June, July, and December, and off West Greenland in July and August.

At 973 hydrographic stations 11,040 observations of temperature and 10,627 of salinity were taken. In addition, analyses of 1,812 O_2 and 1,331 P_2O_5 samples were made.

Current measurements, by means of serial current meters, were made during March and April in the Lofoten area.

Fixed Oceanographic Stations. Routine observations of salinity and temperature from surface to bottom were continued during the year at the oceanographic stations Utsira I and II, Hardangerfjorden, Sognesjøen, Skrova (in the Vestfjord), Eggum, Nordkapp, Kongsfjorden, Svalbard (LN 79°00′, LE 11°30′) and (from 6. August 1957) Lista (LN 58°05.1′, LE 6°32.5′).

Sea Surface Thermograph Service. Thermograph records were obtained from 6 liners running the following routes from Bergen:—

1. to Newcastle
2. - Rotterdam
3. to New York
4. - Kirkenes (East Finnmark)
5. - Oslo.

Salinity samples were collected in fixed positions on these routes. Thermograph records were also obtained from a liner running between Southampton and the Canary Islands in January, February, September, and October.

Flødevigen Sea-Fish Hatchery, Arendal

Hydrographic investigations were carried out by "G. M. Dannevig" in Skagerak along the Arendal-Hirtshals section in January, March, May, June, and September, in the Oslofjord and the fjords of southern Norway in May and September and in coastal water between Kristiansand and Stavanger in June.

University of Bergen, The Geophysical Institute

In March M/S "Helland-Hansen", the new research vessel of the Geophysical Institute was launched by A/S Westermoen, Mandal. She is 114 feet long and has a 400 HP Bergen Diesel motor, which gives her a speed of 10.5 knots. In June and July she made her first cruise in the Norwegian Sea, collaborating with the M/S "Armauer Hansen", for studies of the dynamics of the currents. Current measurements from an anchored ship and bottom current measurements were carried out simultaneously with hydrographical investigations in a dense network of stations.

Weather Ship Station M

The regular investigations at Weather Ship Station M (LN 66°, LE 2°) were continued (S/S "Polarfront I" and S/S "Polarfront II"). These investigations include 6 stations per week, of which one station to 150 m, four stations to 1,000 m and one station to about 2,500 m depth.

In addition, sea surface thermograph records at the same station and between this station and Bergen have been continued.

Sea surface samples have been collected in fixed positions between station M and Bergen.

Poland

(Sea Fisheries Institute)

Cruises. The winter cruise in the Baltic Sea was carried out in March and April instead of February owing to the unfavourable weather conditions. For the same reason the recommended summer and autumn cruises had to be delayed also. In total, 140 series of measurements (T°, S $^0/_{00}$, occasionally O_2 and P) were made. The following stations (for positions see Ann. Biol., **12**: 111), where observations are carried out regularly, were visited:—

A_1	(Arkona Deep)	—	26.III.	17.V.	—	—	20.XI.
B_6	(Bornholm Gate)	24.I.	26.III.	17.V.	—	—	20.XI.
B_1	(Bornholm Deep)	24.I.	26.III.	16.V.	18.VI.	—	23.XI.
B_4	(Bornholm Basin/Slupsk Furrow Ridge)	—	27.III.	18.V.	—	—	4.XII.
B_2	(Slupsk Furrow W)	—	7.IV.	22.V.	—	10.IX.	3.XII.
B_3	(Slupsk Furrow E)	—	6.IV.	22.V.	—	6.IX.	22.XI.
G_3	(Gdańsk Deep N)	13.II.	5.IV.	30.V.	11.VII.	—	2.XII.
G_2	(Gdańsk Deep S)	13.II.	5.IV.	30.V.	9.VII.	7.IX.	2.XII.
Gt_1	(Gothland Deep S)	—	6.IV.	23.V.	—	6.IX.	3.XII.
Gt_2	(Gothland Deep NE from Gt_1)	—	6.IV.	—	—	6.IX.	—
K_4	(NE from Rozewie)	13.II.	—	21.V.	—	—	21.XI.

Portugal

(H. Vilela)

No hydrographical observations were made in connexion with the Hydrographical Committee in 1957.

Scotland

(J. B. Tait)

Scottish research ships "Explorer", "Scotia", "Clupea", and "Kathleen", during 1957 worked a total of 1,362 hydrographic stations in the northern and central North Sea, the Faroe-Shetland Channel and west Scottish waters, and in the region around Iceland. Over 7,000 serial temperature and salinity observations were made, 1,100 oxygen and nearly 3,000 phosphate determinations, and about 1,600 surface drift-bottles were liberated. The latter operations were supplemented by the liberation of 700 bottles from and *en route* to Weather Stations A, I, J, and K.

Spain

(F. Balén)

Instituto Hidrografico de la Marina

Tidal observations for reduction of soundings were carried out in the following areas:—

Cantabrian Sea:	Avilés
North-west coast of Spain:	Cariño Punta Candelaria (Cedeira) El Ferrol del Caudillo Finisterre Vigo
South-west coast of Spain:	Cadiz
South coast of Spain:	Adra Almería
South-east coast of Spain:	Cartagena Cabo de Palos
East coast of Spain:	Barcelona
Canary Islands:	Bay of San Marcos Harbour of La Luz Santa Cruz de la Palma

Current measurements were carried out on the following points:—

South coast of Spain:	36°47.8′N, 2°25.9′W 36°42.0′N, 2°11.0′W
West coast of Africa:	Santa Isabel de Fernando Poó (Spanish Guinea)

Sweden

(B. Kullenberg)

Sections P and M were worked in April, July, and September.

The fjords on the west coast of Sweden were investigated in April, July, and September.

Regular observations of temperature, salinity, and currents were carried out at ten lightships and at Bornö Station in the Gullmar Fjord.

Drift-bottle experiments were carried out in the Baltic.

The pollution in the Sound was investigated in April.

The hydrographical conditions of the deep basins in the Baltic were investigated in April and September.

Observations of temperature, salinity, and oxygen, together with plankton catches were carried out across the Bothnian Sea in May and June.

Extensive observations of temperature, salinity, and oxygen content were made in the Stockholm Archipelago May/November.

U.S.S.R.

Oceanographic observations coupled with survey fishing operations were carried out in the areas of sardine and tuna fisheries in the Atlantic Ocean, in waters between the Azores, Canary Islands, and the coast of Africa, as well as in the area between the African coast and Cape Verde Islands and further south.

Hydrometeorological data were secured simultaneously with experimental fishing and observations on distribution of plankton and micro-organisms. The results obtained during these observations will further elucidate the ecological characteristics of commercial fishes and oceanologic conditions in these areas of fishing activities.

Hydrometeorological observations were carried out in the course of trawl fishing in the area of the Newfoundland Banks and Davis Strait.

Research fishing operations accompanied by hydrometeorological and occasional oceanographic observations were continued in June in the Denmark Strait and south of Iceland. The purpose of the observations was not only to study peculiar features of the waters in the area, but also to collect data on the exchange of waters through Denmark Strait. The oceanographic

observations in this area were most complete in character, since this was the region directly neighbouring the Norwegian Sea, the latter being the place of planned Soviet investigations according to the IGY programme.

In the Baltic Sea oceanographic surveys were undertaken in the areas of Arkona and Bornholm Deeps, Slupsk Furrow, and the southern Gothland Deep; also in the mouth of Gdańsk Bay.

Observations were made four times a year in order to obtain information on the temperature and salinity conditions of these waters in connexion with fishery in the southern Baltic. It is a well known fact that cod and herring (salaka) fisheries in the Baltic largely depend on the temperature which in its turn is effected in winter by the intensity of the influx of high-salinity waters through Scandinavian-Danish straits feeding the lower layers of the Baltic Deeps.

Together with routine observations of temperature in the Barents, Greenland, and Norwegian Seas and partly of the salinity conditions in the Barents Sea, oceanographic studies were carried out in these basins that will provide material for determining the conditions for trawl and drift-net fisheries. Preliminary work was begun in the area in connexion with future investigations according to the IGY programme.

Additional information was obtained that allows to define the character of migrations of herring that feed in the Norwegian and Greenland Seas, depending on cool or warm regime of the year in these waters. (M. Fedosov).

Oceanographical research in the Barents, Norwegian, and Greenland Seas were in 1957 carried out by the Murmansk Hydro-Meteorological Service, the Murmansk Fishery Investigations and the Polar Research. Institute for Fishery Economy and Oceanography.

Investigations were carried out in the Barents Sea mainly for fisheries purposes, thus at a series of fixed oceanographical sections by the research vessels "Poljarnik", "Topseda", and "I. Otkupshikov". During the whole year the southern half of the Sea was the best investigated.

In the Norwegian and Greenland Seas the oceanographical observations covered the north-eastern and southern parts. The expeditions were undertaken by the research vessels "Poljarnik" and "Sevastopol".

The material will be published in the *Bulletin Hydrographique* of the International Council for the Exploration of the Sea. The observations were carried out most systematically along the following standard sections:—

Barents Sea

Section S: North Cape-Bear Island.
Section U1: Along the Kola meridian.
Section 1K: From Svjatoi Nos in direction 14°.
Section K: Northern Slope of the Kanin shelf.
Section K1K: Bear Island-South Cape Island.

Norwegian and Greenland Seas

Section on 74°30′ N from Bear Island towards west.
Section on 71°10′ N from Jan Mayen towards east.

Furthermore, hydrological surveying of the southern regions of the Norwegian and Greenland Seas. (V. Lednev).

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Plankton Committee

1957

By E. Steemann Nielsen

Belgium

(E. Leloup)

The following observations were made:—

"West-Hinder" Lightship

Fortnightly plankton samples:—

(a) A sample at the surface, filtering of 100 litres water—net silk no. 25—for phytoplankton.
(b) A sample taken vertically—from the bottom to the surface—net silk no. 3—for zooplankton.

Fishery Research Vessel "Hinders"

(a) Line Gravelines—Deal (Station B 13, 14, 15, and 16) and the Belgian coast (Station B 22 — off Nieuport):—
Once a month during the months January/August a plankton sample was taken vertically—from the bottom to the surface—net silk no. 3—for zooplankton.
(b) Vertical plankton samples were taken at regular intervals on different points of the Belgian coast when the "Hinders" put to sea on experimental fishing.

Denmark

(Jul. Grøntved)

Measurements of the organic matter produced by the phytoplankton in the Great Belt area and in the northern Kattegat have been continued throughout the year. By means of the ^{14}C method the experiments were carried out fortnightly on board the lightvessels "Halsskov Rev" and "Anholt Nord".

Investigations on the primary production of the plankton have been carried out in the period March/October in Harre Vig in the western Limfjord where an oyster culture was established. The result may serve to throw light on the nutritional conditions for the oysters.

In the sheltered coastal waters, Næraa Strand, Nibe Bredning, and Skibsted Fjord investigations were carried out on the productivity of the sedentary microvegetation. In the same places the productivity of the phytoplankton was measured. Thus a comparison is possible between these localities in respect of the productivity of the total microvegetation.

In two coastal localities, Næraa Strand and Dybsø Fjord the standing crop of the macrovegetation was estimated in spring and again in autumn. On the basis of these estimations the yield was calculated for the summer half-year.

During the cruise of "Dana" in April/May and in September phytoplankton was sampled in the western part of the North Sea.

In the North Atlantic and in the waters west of Greenland photosynthesis experiments were carried out at a number of "Dana" stations. The rate of respiration of the phytoplankton was also measured and plankton samples were collected for microscopical examination and for measurements of chlorophyll. In the same areas zooplankton was collected with stramin net and with Hensen net.

Measurements of the primary production have been continued in coastal areas at Narssaq and at Godthaab, W. Greenland.

England

(J. G. Cattley)

Barents Sea

During 5 cruises of the "Ernest Holt" between late April and early December routine vertical hauls were made on the regular lines of stations south and west of Bear Island. On the cruises in April/May, August, and November/December vertical hauls were also made at stations on the hydrographic sections off Malangen, between Bear Island and the Central Bank and off North Cape. In May and July a line of stations was worked off West Spitsbergen in about 79° N and in October lines were worked between Hope Island and the Great and Central Banks. The stock of zooplankton was high in late summer and the general number level was higher than that of 1955 and 1956 but not so high as that of 1954. Tow-net hauls for fish larvae were made between Malangen and Bear Island in April/May and June.

Atlantic

Vertical hauls for zooplankton from 100 metres to the surface have continued to be taken from the British Ocean Weather Ships when at stations "I", "J", "A", or "K".

North Sea

Five cruises were made in the Southern Bight between January and the beginning of April with the object of relating the abundance of plaice eggs and the survival of plaice larvae with the plankton and hydrographical conditions.

Hensen net observations at the usual monthly Flamborough Line stations were carried out from April to September, as well as the cruise regularly made off

the NE coast in June, both for species numbers and for dry weight and fat.

On the Flamborough Line the general level of *Calanus* showed a recovery from the sharp fall it sustained in 1956 back to a level comparable to that of the high period 1950—55. Data for the June cruise are in conformity with this result.

Values of total dry weight from the last cruise were high and equal to those of the 1952—55 high level, while confirmation from the Flamborough Line data is that the total dry weight has gone back to a level higher than in the previous two years.

In October and the beginning of November two Hensen net grids were carried out in conjunction with echo-surveys for herring. In the first, from 53°45′ to 52° N between the English coast and 4° E, the plankton of the whole area north of 53° N was characterized by the flowering of *Rhizosolenia styliformis* and *Biddulphia sinensis*, although the number of cells recorded per cubic metre were nowhere in excess of 250,000 and 75,000 respectively. South of 53° N the catches were light and consisted mainly of zooplankton. In the second grid, of only 7 stations from 53° N to 52°30′ N between 1°56½′ E and 3°41′ E the numbers of these diatoms per cubic metre were still extremely light or even absent.

Finland

(E. Halme)

1. Investigations into the changes in the fauna and flora of the bay of Gennarbyviken on the SW coast of Finland as a result of its isolation from the sea in 1957 (for industrial purpose). The studies are included in the scientific activity of the Zoological Station at Tvärminne.

2. In addition, the following investigations were carried out at the said station: studies on the biology, including the vertical migrations, of the copepod *Limnocalanus grimaldii*; studies on the composition and biology of the populations of chironomid larvae inhabiting the (marine) waters near the station.

3. Investigations into the intestinal parasites of the Baltic herring (*Clupea harengus membras*).

4. The biological research work of the research vessel "Aranda" during 1957 was as follows:—

2. to 19. June. Samples were taken for the Swedish-Finnish plankton programme;

29. June to 26. July. Plankton samples were taken during hydrographic investigations in the Barents Sea;

27. to 30. August. Various pollution problems were studied in the sea area off Kotka.

France

(J. Furnestin)

Institut des Pêches Maritimes

Le zooplankton est étudié dans ses rapports avec l'hydrologie des secteurs où ont été effectuées les récoltes.

En ce qui concerne l'Atlantique et les mers adjacentes, au cours de l'année 1957, les collections suivantes ont été examinées:—

1. Chaetognathes récoltés dans le Golfe de Guinée (campagne 1956 de la "Calypso"). Note à paraître dans les Annales de l'Institut Océanographique.
2. Chaetognathes (*S. setosa*) récoltés en Mer du Nord par le "Président-Théodore-Tissier" (campagne 1957).
   Note à paraître dans la Revue des Travaux de l'Institut des Pêches Maritimes.
3. Chaetognathes récoltés le long de la côte ouest d'Afrique par les navires belges "Mercator", "Belgica" et "Nordende" (étude en cours).
4. Chaetognathes provenant des campagnes 1908—1919 du "Thor" (étude en cours).

Station Maritime de l'Université d'Alger

En 1957, 8 chercheurs ont continué l'étude du phytoplancton et du zooplancton au large de l'Algérie, surtout sur les problèmes suivants:—

Résultats de la campagne de la "Calypso" (juillet 1955) en Méditerranée centrale et orientale. La fertilité élémentaire est du même ordre qu'au large de l'Algerie, mais les grains de sable en suspension, d'origine désertique, sont 3000 fois plus abondants qu'à Alger et nuisent souvent aux unicellulaires.

Des eaux de la Mer Morte (Israël) ont été dosées au microscope inversé; elles contiennent beaucoup de *Coccolithus* et *Exuviella* comme le sud méditerranéen.

3 plongées en bathyscaphe ont été effectuées à 9 milles de Toulon, montrant un maximum de plancton entre 200 et 900 mètres. (F. Bernard).

Réforme de la cytologie et de la systématique des radiolaires. Etude de l'envahissement de la baie d'Alger par la chloromonadine *Chattoniella subsalsa*, toxique pour les poissons ici comme aux Indes. (A. Hollande et M. Enjumet).

Facteurs de variation du zooplancton près d'Alger en fonction des vents et des températures. Révision de plusieurs thaliacés. (Mme F. Bernard).

Variations, jour par jour, du phytoplancton en surface près du port d'Alger. L'arrivée exceptionelle d'eaux atlantiques au fond de la baie d'Alger enrichit cette zone en phosphates, fait augmenter les diatomées plus que les *Coccolithus* et diminue la proportion d'*Exuviella* et de *Ceratium*. (C. Bertoldo).

Le phytoplancton atlantique près de Tanger a été suivi de même, jour par jour, pendant 3 ans. Le besoin de forts éclairements solaires pour les dinoflagellés à été confirmé. (G. Trotet).

Germany

(J. Krey)

Biologische Anstalt Helgoland

1. During a cruise of F.R.V. "Anton Dohrn" in the area of Iceland-Greenland in April 1957 investigations on the distribution of plankton and fish fry, especially that of redfish were carried out. (H. Aurich).

Simultaneous quantitative samples of nanoplankton and biomass were analysed. (M. Gillbricht).

2. During May 1957 comparative research work was undertaken about the quantitative distribution of the fry of summer spawners in the North Sea and the English Channel. (H. Aurich).

3. In June and July periodical observations were made in order to control the variations of the population of zooplankton and fish fry in connexion with climatic changes in the southern North Sea. (H. Aurich).

Institut für Seefischerei, Hamburg

Analysis of plankton samples taken in August 1953 on a cross section in the North Sea was continued. A correlation of the vertical distribution of plankton with the upper thermocline and with the turbidity screen could be shown. (A. Wulff, K. Schubert).

Institut für Meereskunde, Kiel

1. From a section through the Baltic in 1956 a great number of water samples was analysed on O_2, PO_4, total P, albumen, chlorophyll, and seston. This work gave an impression of the trophic state and of problems of mineralization especially in the central Baltic. (K. Banse, J. Krey).

2. Investigations on the vertical migration of plankton copepods in the Kiel Bay were completed. (K. Banse).

3. On two stations in the Kiel Bay long-term investigations on the productivity problem were initiated. Analyses on total P, PO_4-P, seston, albumen, and oxygen are regularly carried out twice a month. (J. Krey).

4. The problem of correlation of ^{14}C productivity and the standing crop determined by chlorophyll, albumen, and particulate P was further followed in Danish waters. (E. Steemann Nielsen, J. Krey).

Iceland

(I. Hallgrímsson)

Zooplankton

1. R/V "Ægir": (a) From 11. to 30. April and 20. May to 23. June a zooplankton survey was carried out in Icelandic waters and in the Norwegian Sea. (b) From 26. June to 10. September zooplankton samples were collected on the North-Icelandic herring grounds. The hauls were made by Hensen net, of no. 3 silk, between 0 and 50 m. A horizontal plankton sampling by multidepth plankton indicators was also carried out. The whole material was worked up at sea by a short-cut method. (I. Hallgrímsson, J. Jakobsson).

2. R/V "María Júlía": Larvae of bottom invertebrates were collected in Faxaflói and at a few other places on the north coast. (A. Sigurðsson).

3. Material pertaining to the early life history of *Mallotus villosus* from various preceding years was worked up. (H. Einarsson).

4. In co-operation with the Oceanographic Laboratory in Edinburgh, a continuous plankton recorder programme for the Irminger Sea was started in February.

Phytoplankton

During the cruises in April and from May to June water bottle samples were collected at most hydrographical stations. The material is being worked up by the sedimentation method.

In the May/June cruises primary production measurements by the ^{14}C method were carried out. (Th. Thórðardóttir).

Ireland

(A. E. J. Went)

No plankton work was done during 1957.

Netherlands

No report received.

Norway

(T. Braarud)

I. University of Oslo

1. **Surveys**

The following phytoplankton surveys were undertaken:—

(a) The Norwegian Sea. The examination of quantitative samples from the "G. O. Sars" cruises in 1952/53 was concluded. (E. Ramsfjell).

(b) The Norwegian Sea. Quantitative phytoplankton samples from the Jan Mayen area in March/April, 1955, were examined and a report prepared for publication. (Th. Smayda).

(c) Quantitative samples collected in connexion with G. Berge's production measurements with the ^{14}C method on the "G. O. Sars" cruise in the Norwegian Sea, June 1955, were examined. (E. Paasche).

(d) Quantitative samples from the all-year survey of the Hardanger Fjord, 1955/56, were examined. (Bjørg Føyn, Å. Överland).

2. **Special Investigations on Phytoplankton**

(a) Electron microscope studies of coccolithophorids were continued. (K. Ringdal Gaarder).

(b) A biometric-taxonomical study of the *Dinophysis* population of Norwegian coastal waters was undertaken. (I. Solum).

II. Fisheries Directorate, Bergen

During the first half of April the banks along the north-western coast of Norway, from Andenes to Træna, were surveyed in order to locate the spawning areas of the haddock. Vertical and horizontal hauls were made with a metre egg net.

The coastal areas of northern Norway were investigated with Clarke-Bumpus plankton samplers from the beginning of May to the middle of June. The banks off Möre and Halten were crossed, and the area from Lofoten to North Cape was covered twice during four weeks. Eggs and larvae of cod, Norway pout, coalfish, and larvae of herring were very scarce. The vernal growth of phytoplankton seemed to be about one month later than in 1956. During the first half of May the plankton nets were heavily clogged on most of the stations, rendering the hauls less reliable.

During the last half of the cruise a high-speed net was used, being towed horizontally at a speed of 8 miles at different levels between 30 m and the surface. It worked very satisfactorily, catching larvae of herring up to 35 mm and of cod up to 26 mm.

Plankton sampling was continued at the permanent coast stations of Norway, western Spitsbergen, and at the Weather Ship Station "M". In all localities the plankton was less abundant than in the previous years, and the spring maximum somewhat delayed.

During July and August vertical hauls were made with a 70 cm Nansen net during a cruise from off Möre to Bear Island. The plankton was usually scarce, mainly consisting of *Aglantha digitale*, except west of Bear Island and north of northern Norway, where *Calanus finmarchicus* was abundant. Post-larvae and young of cod, haddock, Norway pout, coalfish, and herring were sampled with a high-speed net, and a Petersen pelagic trawl. (K. F. Wiborg).

Investigations on the spawning of sprat were continued in the fjords south of Bergen from May to the middle of July. In addition, four sections were worked across the Norwegian Deep. Plankton samples were taken with Nansen and metre nets. The investigations on the plankton of the Hardanger Fjord, initiated in 1955, was continued. (K. R. Gundersen).

In the Skagerak and adjacent areas vertical hauls were made with a metre net in the upper 50—100 m in May/June, in order to locate the areas and strength of the spawning of the sprat. (G. Dannevig).

The production of phytoplankton under conditions of "simulated daylight" has been compared with the usual method of submerged bottles in order to find the optimum light intensity for plankton from the sea.

The technique for measuring the production of phytoplankton by means of ^{14}C has been improved.

An instrument for continuous recording of the transparency of the surface water from a ship underway has been constructed.

A biological water sampler and a photometer for simultaneous recording of different qualities of light are under construction.

The occurrence of radioactive ^{90}Sr in the sea and in marine animals in northern waters has been investigated, and the laboratory equipment improved. As a preliminary result the concentration of ^{90}Sr in cod from the Barents Sea and in seals from the Jan Mayen area was found to be very low, only $^{1}/_{10}$ of that in sheep from western Norway. (G. Berge).

Poland

(W. Mańkowski)

864 samples were collected at 138 southern Baltic stations by means of the following nets:—Hensen, 429 samples; Ring trawl Ø 1 m, 83 samples; Hensen net, 130 samples; all in vertical hauls from the bottom to the surface, together with 104 layer samples. The standard Copenhagen net was used in vertical hauls to collect 21 samples, and in layer hauls 97 samples were taken.

Scotland

(J. H. Fraser)

Plankton collections continued to be taken in 1957 on similar lines to previous years, arranged to give information from as wide an area as possible in the northern North Sea, Shetland, Faroe Channel, Faroe-Iceland and in and around Icelandic waters.

In addition to the gear used in previous years the Hardy Continuous Recorder was used from "Explorer" in the Shetland and Icelandic areas and the Gulf III high-speed sampler was used for the assessment of herring larvae. The objectives were essentially as last year except for the more detailed study of planktonic conditions in the Icelandic area. They include the general assessment of the phytoplankton (T. Lovegrove); the relationship between zooplankton, environmental conditions and the fisheries in the area as a whole and in Icelandic waters in particular (J. H. Fraser) and in the Clyde area (E. J. Perkins); the productivity of the northern North Sea using the ^{14}C technique, and the relationship between productivity and the hydrographic conditions (J. H. Steele); the broods of the planktonic stages of fish, especially herring and haddock (A. Saville), special attention being given to the newly hatched Clyde herring, and the drift of larvae in the North Sea.

The special surveys of the hydro-plankton of the herring grounds were continued in 1957 in close co-operation with the Edinburgh laboratory as in 1956, and the co-operation with the National Institute for Research in Dairying in the assessment of vitamin B 12 in sea water and in plankton organisms has also been continued.

The cultures of diatoms and dinoflagellates have been maintained in connexion with the work of bio-assay of growth-promoting or growth-inhibiting properties of enriched sea waters. Attempts have also been made to compare the behaviour of bacteriafree and normal cultures of organisms in enriched sea waters (R. Johnston and Joyce A. Bentley). Work has continued on the examination of various algal species for their content of plant growth hormones, and all the species so far examined, which include both marine and freshwater species, have been shown to contain at least two auxin-like substances. These substances also occur in media in which the algae have grown. They have been located by chromatographic techniques and bio-assay of fractions. The two principal

compounds are as yet unidentified chemically, but there is evidence that they also exist in the higher plants, and are therefore probably concerned in some fundamental aspect of plant cell metabolism. Work is continuing on the chemical nature of these compounds. (JOYCE A. BENTLEY).

Spain

(J. CUESTA)

The following observations have been made:—

1. Collections of plankton have been carried out throughout the year by the laboratories of Santander and Vigo.
2. Quantitative investigations on the regional plankton of Santander with the Utermöhl microscope.

Sweden

(H. HÖGLUND)

The West Coast

As in previous years plankton samples were collected in March and April within and outside the northern archipelago of Bohuslän. (H. HÖGLUND).

The Baltic

The plankton work in the Bothnian Sea has been continued. During the months May/August, 1957, samples were taken with the Hensen net on 12 cruises across the Bothnian Sea. This work was done by the Finnish R/V "Aranda" and the Swedish R/V "Skagerak" and "Eystrasalt" in co-operation.

In addition, some plankton samples have been taken in the northern Baltic. (A. LINDQUIST).

The plankton samples collected in 1957 have been worked up.

U.S.S.R.

(B. P. MANTEUFEL)

During 1957 Soviet investigations on plankton in the Atlantic areas were carried out in connexion with the study of food and biotic habitat of such plankton-eating fish as herring, salaka, kilka, and sardine. 3,355 plankton samples were taken and 130 of phytoplankton. Special oceanographical plankton research will be commenced in 1958 in accordance with the IGY.

Plankton surveys in the Baltic were carried out simultaneously with studies of kilka and salaka. Study of sardine in the Bay of Biscay and off the west coast of Africa was also accompanied by plankton sampling.

Plankton samples were taken with: (a) No. 38 Juday net of 37 cm in diameter, (b) No. 23 Nansen net of 50 cm diameter, (c) egg-net No. 14 of 80 and 100 cm diameter, and (d) bathymeter for sampling phytoplankton.

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